

SEQUENCE LISTING

<110> Coit, Doris
Medina-Selby, Angelica
Selby, Mark
Houghton, Michael

<120> NOVEL HCV NON-STRUCTURAL POLYPEPTIDE

<130> PP01617.002

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<160> 19

<170> PatentIn Ver. 2.0

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<211> 9620

<212> DNA

<213> Artificial Sequence

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<221> CDS

<222> (1990)..(7302)

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<223> Description of Artificial Sequence: Hepatitis C pns345

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1490	1495	1500
atc tgt gaa agc gcg ggg gtc cag gag gac	gcg gcg agc ctg aga gcc	6543
Ile Cys Glu Ser Ala Gly Val Gln Glu Asp	Ala Ala Ser Leu Arg Ala	
1505	1510	1515
ttc acg gag gct atg acc agg tac tcc gcc ccc cct	ggg gac ccc cca	6591
Phe Thr Glu Ala Met Thr Arg Tyr Ser	Ala Pro Pro Gly Asp Pro Pro	
1520	1525	1530
caa cca gaa tac gac ttg gag ctc ata	aca tca tgc tcc tcc aac gtg	6639
Gln Pro Glu Tyr Asp Leu Glu Leu Ile	Thr Ser Cys Ser Ser Asn Val	
1535	1540	1545 1550
tca gtc gcc cac gac ggc gct gga aag agg	gtc tac tac ctc acc cgt	6687
Ser Val Ala His Asp Gly Ala Gly Lys Arg	Val Tyr Tyr Leu Thr Arg	
1555	1560	1565
gac cct aca acc ccc ctc gcg aga gct gcg tgg	gag aca gca aga cac	6735
Asp Pro Thr Thr Pro Leu Ala Arg	Ala Ala Trp Glu Thr Ala Arg His	
1570	1575	1580
act cca gtc aat tcc tgg cta ggc aac ata atc	atg ttt gcc ccc aca	6783
Thr Pro Val Asn Ser Trp Leu Gly Asn Ile Ile	Met Phe Ala Pro Thr	
1585	1590	1595
ctg tgg gcg agg atg ata ctg atg	acc cat ttc ttt agc gtc ctt ata	6831
Leu Trp Ala Arg Met Ile Leu Met	Thr His Phe Phe Ser Val Leu Ile	
1600	1605	1610
gcc agg gac cag ctt gaa cag gcc ctc gat	tgc gag atc tac ggg gcc	6879
Ala Arg Asp Gln Leu Glu Gln Ala Leu Asp	Cys Glu Ile Tyr Gly Ala	
1615	1620	1625 1630
tgc tac tcc ata gaa cca ctg gat cta cct cca	atc att caa aga ctc	6927
Cys Tyr Ser Ile Glu Pro Leu Asp Leu Pro Pro	Ile Ile Gln Arg Leu	
1635	1640	1645
cat ggc ctc agc gca ttt tca ctc cac agt	tac tct cca ggt gaa atc	6975
His Gly Leu Ser Ala Phe Ser Leu His Ser	Tyr Ser Pro Gly Glu Ile	
1650	1655	1660
aat agg gtg gcc gca tgc ctc	aga aaa ctt ggg gta ccg ccc ttg cga	7023
Asn Arg Val Ala Ala Cys Leu	Arg Lys Leu Gly Val Pro Pro Leu Arg	

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1665	1670	1675	
gct tgg aga cac cgg gcc cgg agc gtc cgc gct agg ctt ctg gcc aga			7071
Ala Trp Arg His Arg Ala Arg Ser Val Arg Ala Arg Leu Leu Ala Arg			
1680	1685	1690	
gga ggc agg gct gcc ata tgt ggc aag tac ctc ttc aac tgg gca gta			7119
Gly Gly Arg Ala Ala Ile Cys Gly Lys Tyr Leu Phe Asn Trp Ala Val			
1695	1700	1705	1710
aga aca aag ctc aaa ctc act cca ata gcg gcc gct ggc cag ctg gac			7167
Arg Thr Lys Leu Lys Leu Thr Pro Ile Ala Ala Ala Gly Gln Leu Asp			
1715	1720	1725	
ttg tcc ggc tgg ttc acg gct ggc tac agc ggg gga gac att tat cac			7215
Leu Ser Gly Trp Phe Thr Ala Gly Tyr Ser Gly Gly Asp Ile Tyr His			
1730	1735	1740	
agc gtg tct cat gcc cgg ccc cgc tgg atc tgg ttt tgc cta ctc ctg			7263
Ser Val Ser His Ala Arg Pro Arg Trp Ile Trp Phe Cys Leu Leu Leu			
1745	1750	1755	
ctt gct gca ggg gta ggc atc tac ctc ctc ccc aac cga tgaaggttg			7312
Leu Ala Ala Gly Val Gly Ile Tyr Leu Leu Pro Asn Arg			
1760	1765	1770	
ggtaaact cccgcctaaa aaaaaaaaaa aatctagaaa ggcgcgcaa gatatcaagg			7372
atccactacg cgtagagct cgctgatcag cctcgactgt gccttctagt tgccagccat			7432
ctgttgtttg cccctcccc gtgccttctt tgacctgga aggtgccact cccactgtcc			7492
tttcctaata aaatgaggaa attgcatcgc attgtctgag taggtgtcat tctattctgg			7552
ggggtggggt ggggcaggac agcaaggggg aggattggga agacaatagc aggcattgctg			7612
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gttcgctcca agctgggctg tgtgcacgaa cccccgttc agcccgaccg ctgcgcctta			8092
tccggttaact atcgtcttga gtccaaccg gtaagacacg acttatcgcc actggcagca			8152
gccactggta acaggattag cagagcgagg tatgtaggcg gtgctacaga gttcttgaag			8212
tggtggccta actacggcta cactagaagg acagtatttg gtatctgcgc tctgctgaag			8272

ccagttacct tcggaaaaag agttggtagc tcttgatccg gcaaacaac caccgctggc 8332
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 gatcctttga tcttttctac ggggtctgac gctcagtga acgaaaactc acgttaaggg 8452
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 cccgtcgtgt agataactac gatacgggag ggcttaccat ctggccccag tgctgcaatg 8692
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 cgttcttcgg ggcgaaaact ctcaaggatc ttaccgctgt tgagatccag ttcgatgtaa 9292
 cccactcgtg cacccaactg atcttcagca ttttttactt tcaccagcgt ttctgggtga 9352
 gcaaaaacag gaaggcaaaa tgccgcaaaa aagggaataa gggcgacacg gaaatgttga 9412
 atactcatatc tcttcctttt tcaatattat tgaagcattt atcagggtta ttgtctcatg 9472
 agcggatata tatttgaatg tatttagaaa aataaataaa taggggttcc gcgcacattt 9532
 ccccgaaaag tgccacctga cgtctaagaa accattatta tcatgacatt aacctataaa 9592
 aataggcgta tcacgaggcc ctttcgtc 9620

<210> 2
 <211> 1771
 <212> PRT
 <213> Hepatitis C virus

<220>
 <223> Description of Artificial Sequence: Hepatitis C pns345

<400> 2
 Met Ala Ala Tyr Ala Ala Gln Gly Tyr Lys Val Leu Val Leu Asn Pro

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1	5	10	15
Ser Val Ala Ala Thr Leu Gly Phe Gly Ala Tyr Met Ser Lys Ala His	20	25	30
Gly Ile Asp Pro Asn Ile Arg Thr Gly Val Arg Thr Ile Thr Thr Gly	35	40	45
Ser Pro Ile Thr Tyr Ser Thr Tyr Gly Lys Phe Leu Ala Asp Gly Gly	50	55	60
Cys Ser Gly Gly Ala Tyr Asp Ile Ile Ile Cys Asp Glu Cys His Ser	65	70	75
Thr Asp Ala Thr Ser Ile Leu Gly Ile Gly Thr Val Leu Asp Gln Ala	85	90	95
Glu Thr Ala Gly Ala Arg Leu Val Val Leu Ala Thr Ala Thr Pro Pro	100	105	110
Gly Ser Val Thr Val Pro His Pro Asn Ile Glu Glu Val Ala Leu Ser	115	120	125
Thr Thr Gly Glu Ile Pro Phe Tyr Gly Lys Ala Ile Pro Leu Glu Val	130	135	140
Ile Lys Gly Gly Arg His Leu Ile Phe Cys His Ser Lys Lys Lys Cys	145	150	155
Asp Glu Leu Ala Ala Lys Leu Val Ala Leu Gly Ile Asn Ala Val Ala	165	170	175
Tyr Tyr Arg Gly Leu Asp Val Ser Val Ile Pro Thr Ser Gly Asp Val	180	185	190
Val Val Val Ala Thr Asp Ala Leu Met Thr Gly Tyr Thr Gly Asp Phe	195	200	205
Asp Ser Val Ile Asp Cys Asn Thr Cys Val Thr Gln Thr Val Asp Phe	210	215	220
Ser Leu Asp Pro Thr Phe Thr Ile Glu Thr Ile Thr Leu Pro Gln Asp	225	230	235
Ala Val Ser Arg Thr Gln Arg Arg Gly Arg Thr Gly Arg Gly Lys Pro	245	250	255
Gly Ile Tyr Arg Phe Val Ala Pro Gly Glu Arg Pro Ser Gly Met Phe	260	265	270
Asp Ser Ser Val Leu Cys Glu Cys Tyr Asp Ala Gly Cys Ala Trp Tyr	275	280	285
Glu Leu Thr Pro Ala Glu Thr Thr Val Arg Leu Arg Ala Tyr Met Asn	290	295	300
Thr Pro Gly Leu Pro Val Cys Gln Asp His Leu Glu Phe Trp Glu Gly			

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305		310		315		320
Val Phe Thr Gly	Leu Thr His Ile Asp Ala	His Phe Leu Ser Gln Thr				
	325	330			335	
Lys Gln Ser Gly	Glu Asn Leu Pro Tyr Leu	Val Ala Tyr Gln Ala Thr				
	340	345			350	
Val Cys Ala Arg	Ala Gln Ala Pro Pro Pro	Ser Trp Asp Gln Met Trp				
	355	360			365	
Lys Cys Leu Ile	Arg Leu Lys Pro Thr Leu His	Gly Pro Thr Pro Leu				
	370	375			380	
Leu Tyr Arg Leu	Gly Ala Val Gln Asn Glu Ile Thr Leu Thr His Pro					
	385	390			395	400
Val Thr Lys Tyr	Ile Met Thr Cys Met	Ser Ala Asp Leu Glu Val Val				
	405	410			415	
Thr Ser Thr Trp	Val Leu Val Gly Gly	Val Leu Ala Ala Leu Ala Ala				
	420	425			430	
Tyr Cys Leu Ser	Thr Gly Cys Val Val Ile Val Gly Arg Val Val Leu					
	435	440			445	
Ser Gly Lys Pro	Ala Ile Ile Pro Asp Arg Glu Val Leu Tyr Arg Glu					
	450	455			460	
Phe Asp Glu Met	Glu Glu Cys Ser Gln His Leu Pro Tyr Ile Glu Gln					
	465	470			475	480
Gly Met Met Leu	Ala Glu Gln Phe Lys Gln Lys Ala Leu Gly Leu Leu					
	485	490			495	
Gln Thr Ala Ser	Arg Gln Ala Glu Val Ile Ala Pro Ala Val Gln Thr					
	500	505			510	
Asn Trp Gln Lys	Leu Glu Thr Phe Trp Ala Lys His Met Trp Asn Phe					
	515	520			525	
Ile Ser Gly Ile	Gln Tyr Leu Ala Gly Leu Ser Thr Leu Pro Gly Asn					
	530	535			540	
Pro Ala Ile Ala	Ser Leu Met Ala Phe Thr Ala Ala Val Thr Ser Pro					
	545	550			555	560
Leu Thr Thr Ser	Gln Thr Leu Leu Phe Asn Ile Leu Gly Gly Trp Val					
	565	570			575	
Ala Ala Gln Leu	Ala Ala Pro Gly Ala Ala Thr Ala Phe Val Gly Ala					
	580	585			590	
Gly Leu Ala Gly	Ala Ala Ile Gly Ser Val Gly Leu Gly Lys Val Leu					
	595	600			605	
Ile Asp Ile Leu	Ala Gly Tyr Gly Ala Gly Val Ala Gly Ala Leu Val					

610	615	620
Ala Phe Lys Ile Met Ser Gly Glu Val Pro Ser Thr Glu Asp Leu Val		
625	630	635 640
Asn Leu Leu Pro Ala Ile Leu Ser Pro Gly Ala Leu Val Val Gly Val		
	645	650 655
Val Cys Ala Ala Ile Leu Arg Arg His Val Gly Pro Gly Glu Gly Ala		
	660	665 670
Val Gln Trp Met Asn Arg Leu Ile Ala Phe Ala Ser Arg Gly Asn His		
	675	680 685
Val Ser Pro Thr His Tyr Val Pro Glu Ser Asp Ala Ala Ala Arg Val		
	690	695 700
Thr Ala Ile Leu Ser Ser Leu Thr Val Thr Gln Leu Leu Arg Arg Leu		
	705	710 715 720
His Gln Trp Ile Ser Ser Glu Cys Thr Thr Pro Cys Ser Gly Ser Trp		
	725	730 735
Leu Arg Asp Ile Trp Asp Trp Ile Cys Glu Val Leu Ser Asp Phe Lys		
	740	745 750
Thr Trp Leu Lys Ala Lys Leu Met Pro Gln Leu Pro Gly Ile Pro Phe		
	755	760 765
Val Ser Cys Gln Arg Gly Tyr Lys Gly Val Trp Arg Gly Asp Gly Ile		
	770	775 780
Met His Thr Arg Cys His Cys Gly Ala Glu Ile Thr Gly His Val Lys		
	785	790 795 800
Asn Gly Thr Met Arg Ile Val Gly Pro Arg Thr Cys Arg Asn Met Trp		
	805	810 815
Ser Gly Thr Phe Pro Ile Asn Ala Tyr Thr Thr Gly Pro Cys Thr Pro		
	820	825 830
Leu Pro Ala Pro Asn Tyr Thr Phe Ala Leu Trp Arg Val Ser Ala Glu		
	835	840 845
Glu Tyr Val Glu Ile Arg Gln Val Gly Asp Phe His Tyr Val Thr Gly		
	850	855 860
Met Thr Thr Asp Asn Leu Lys Cys Pro Cys Gln Val Pro Ser Pro Glu		
	865	870 875 880
Phe Phe Thr Glu Leu Asp Gly Val Arg Leu His Arg Phe Ala Pro Pro		
	885	890 895
Cys Lys Pro Leu Leu Arg Glu Glu Val Ser Phe Arg Val Gly Leu His		
	900	905 910
Glu Tyr Pro Val Gly Ser Gln Leu Pro Cys Glu Pro Glu Pro Asp Val		

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1220	1225	1230
Thr Phe Asp Arg Leu Gln Val Leu Asp Ser His Tyr Gln Asp Val Leu		
1235	1240	1245
Lys Glu Val Lys Ala Ala Ala Ser Lys Val Lys Ala Asn Leu Leu Ser		
1250	1255	1260
Val Glu Glu Ala Cys Ser Leu Thr Pro Pro His Ser Ala Lys Ser Lys		
265	1270	1275 1280
Phe Gly Tyr Gly Ala Lys Asp Val Arg Cys His Ala Arg Lys Ala Val		
1285	1290	1295
Thr His Ile Asn Ser Val Trp Lys Asp Leu Leu Glu Asp Asn Val Thr		
1300	1305	1310
Pro Ile Asp Thr Thr Ile Met Ala Lys Asn Glu Val Phe Cys Val Gln		
1315	1320	1325
Pro Glu Lys Gly Gly Arg Lys Pro Ala Arg Leu Ile Val Phe Pro Asp		
1330	1335	1340
Leu Gly Val Arg Val Cys Glu Lys Met Ala Leu Tyr Asp Val Val Thr		
345	1350	1355 1360
Lys Leu Pro Leu Ala Val Met Gly Ser Ser Tyr Gly Phe Gln Tyr Ser		
1365	1370	1375
Pro Gly Gln Arg Val Glu Phe Leu Val Gln Ala Trp Lys Ser Lys Lys		
1380	1385	1390
Thr Pro Met Gly Phe Ser Tyr Asp Thr Arg Cys Phe Asp Ser Thr Val		
1395	1400	1405
Thr Glu Ser Asp Ile Arg Thr Glu Glu Ala Ile Tyr Gln Cys Cys Asp		
1410	1415	1420
Leu Asp Pro Gln Ala Arg Val Ala Ile Lys Ser Leu Thr Glu Arg Leu		
425	1430	1435 1440
Tyr Val Gly Gly Pro Leu Thr Asn Ser Arg Gly Glu Asn Cys Gly Tyr		
1445	1450	1455
Arg Arg Cys Arg Ala Ser Gly Val Leu Thr Thr Ser Cys Gly Asn Thr		
1460	1465	1470
Leu Thr Cys Tyr Ile Lys Ala Arg Ala Ala Cys Arg Ala Ala Gly Leu		
1475	1480	1485
Gln Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val Val Ile Cys		
1490	1495	1500
Glu Ser Ala Gly Val Gln Glu Asp Ala Ala Ser Leu Arg Ala Phe Thr		
505	1510	1515 1520
Glu Ala Met Thr Arg Tyr Ser Ala Pro Pro Gly Asp Pro Pro Gln Pro		

<220>

<223> Description of Artificial Sequence: pDeltaNS3NS5

<400> 3

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tggcgggtgt cggggctggc ttaactatgc ggcacagag cagattgtac tgagagtgc 180
ccatatgaag ctttttgcaa aagcctaggc ctccaaaaaa gcctcctcac tacttctgga 240
atagctcaga ggccgaggcg gcctcggcct ctgcataaat aaaaaaatt agtcagccat 300
ggggcggaga atgggcggaa ctgggcgggg aggggaattat tggctattgg ccattgcata 360
cgttgtatct atatcataat atgtacattt atattggctc atgtccaata tgaccgccat 420
gttgacattg attattgact agttattaat agtaatcaat tacgggggtca ttagttcata 480
gcccatatat ggagttccgc gttacataac ttacggtaaa tggcccgct ggctgaccgc 540
ccaacgaccc ccgcccattg acgtcaataa tgacgtatgt tcccatagta acgccaatag 600
ggactttcca ttgacgtcaa tgggtggagt atttacggta aactgcccac ttggcagtac 660
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cctggcatta tgcccagtac atgaccttac gggactttcc tacttggcag tacatctacg 780
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gatccagcct ccgcgcccg gaacggtgca ttggaacgcg gattccccgt gccaaagagt 1140
acgtaagtac cgcctataga ctctataggc acacccttt ggctcttatg catgctatac 1200
tgtttttggc ttggggccta tacacccccg ctcttatgc tataggtgat ggtatagctt 1260
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atttacaat tcacatatac aacaacgcg tccccgtgc ccgcagtttt tattaaacat 1500
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gctccttgct cctaacagtg gaggccagac ttaggcacag cacaatgccc accaccacca 1680
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acagactaac agactgttcc ttcccatggg tcttttctgc agtcaccgtc gtcgacctaa 1980
gaattcacc atg gct gca tat gca gct cag ggc tat aag gtg cta gta ctc 2031
Met Ala Ala Tyr Ala Ala Gln Gly Tyr Lys Val Leu Val Leu
1 5 10
aac ccc tct gtt gct gca aca ctg ggc ttt ggt gct tac atg tcc aag 2079
Asn Pro Ser Val Ala Ala Thr Leu Gly Phe Gly Ala Tyr Met Ser Lys
15 20 25 30
gct cat ggg atc gat cct aac atc agg acc ggg gtg aga aca att acc 2127
Ala His Gly Ile Asp Pro Asn Ile Arg Thr Gly Val Arg Thr Ile Thr
35 40 45
act ggc agc ccc atc acg tac tcc acc tac ggc aag ttc ctt gcc gac 2175
Thr Gly Ser Pro Ile Thr Tyr Ser Thr Tyr Gly Lys Phe Leu Ala Asp
50 55 60
ggc ggg tgc tcg ggg ggc gct tat gac ata ata att tgt gac gag tgc 2223
Gly Gly Cys Ser Gly Gly Ala Tyr Asp Ile Ile Ile Cys Asp Glu Cys
65 70 75
cac tcc acg gat gcc aca tcc atc ttg ggc att ggc act gtc ctt gac 2271
His Ser Thr Asp Ala Thr Ser Ile Leu Gly Ile Gly Thr Val Leu Asp
80 85 90
caa gca gag act gcg ggg gcg aga ctg gtt gtg ctc gcc acc gcc acc 2319
Gln Ala Glu Thr Ala Gly Ala Arg Leu Val Val Leu Ala Thr Ala Thr
95 100 105 110
cct ccg ggc tcc gtc act gtg ccc cat ccc aac atc gag gag gtt gct 2367
Pro Pro Gly Ser Val Thr Val Pro His Pro Asn Ile Glu Glu Val Ala
115 120 125
ctg tcc acc acc gga gag atc cct ttt tac ggc aag gct atc ccc ctc 2415
Leu Ser Thr Thr Gly Glu Ile Pro Phe Tyr Gly Lys Ala Ile Pro Leu
130 135 140
gaa gta atc aag ggg ggg aga cat ctc atc ttc tgt cat tca aag aag 2463
Glu Val Ile Lys Gly Gly Arg His Leu Ile Phe Cys His Ser Lys Lys
145 150 155
aag tgc gac gaa ctc gcc gca aag ctg gtc gca ttg ggc atc aat gcc 2511
Lys Cys Asp Glu Leu Ala Ala Lys Leu Val Ala Leu Gly Ile Asn Ala
160 165 170
gtg gcc tac tac cgc ggt ctt gac gtg tcc gtc atc ccg acc agc ggc 2559

Val	Ala	Tyr	Tyr	Arg	Gly	Leu	Asp	Val	Ser	Val	Ile	Pro	Thr	Ser	Gly	
175					180					185					190	
gat	gtt	gtc	gtc	gtg	gca	acc	gat	gcc	ctc	atg	acc	ggc	tat	acc	ggc	2607
Asp	Val	Val	Val	Val	Ala	Thr	Asp	Ala	Leu	Met	Thr	Gly	Tyr	Thr	Gly	
				195					200					205		
gac	ttc	gac	tcg	gtg	ata	gac	tgc	aat	acg	tgt	gtc	acc	cag	aca	gtc	2655
Asp	Phe	Asp	Ser	Val	Ile	Asp	Cys	Asn	Thr	Cys	Val	Thr	Gln	Thr	Val	
			210					215					220			
gat	ttc	agc	ctt	gac	cct	acc	ttc	acc	att	gag	aca	atc	acg	ctc	ccc	2703
Asp	Phe	Ser	Leu	Asp	Pro	Thr	Phe	Thr	Ile	Glu	Thr	Ile	Thr	Leu	Pro	
		225					230					235				
caa	gat	gct	gtc	tcc	cgc	act	caa	cgt	cgg	ggc	agg	act	ggc	agg	ggg	2751
Gln	Asp	Ala	Val	Ser	Arg	Thr	Gln	Arg	Arg	Gly	Arg	Thr	Gly	Arg	Gly	
	240					245					250					
aag	cca	ggc	atc	tac	aga	ttt	gtg	gca	ccg	ggg	gag	cgc	ccc	tcc	ggc	2799
Lys	Pro	Gly	Ile	Tyr	Arg	Phe	Val	Ala	Pro	Gly	Glu	Arg	Pro	Ser	Gly	
	255				260					265					270	
atg	ttc	gac	tcg	tcc	gtc	ctc	tgt	gag	tgc	tat	gac	gca	ggc	tgt	gct	2847
Met	Phe	Asp	Ser	Ser	Val	Leu	Cys	Glu	Cys	Tyr	Asp	Ala	Gly	Cys	Ala	
				275				280						285		
tgg	tat	gag	ctc	acg	ccc	gcc	gag	act	aca	gtt	agg	cta	cga	gcg	tac	2895
Trp	Tyr	Glu	Leu	Thr	Pro	Ala	Glu	Thr	Thr	Val	Arg	Leu	Arg	Ala	Tyr	
			290				295						300			
atg	aac	acc	ccg	ggg	ctt	ccc	gtg	tgc	cag	gac	cat	ctt	gaa	ttt	tgg	2943
Met	Asn	Thr	Pro	Gly	Leu	Pro	Val	Cys	Gln	Asp	His	Leu	Glu	Phe	Trp	
		305				310						315				
gag	ggc	gtc	ttt	aca	ggc	ctc	act	cat	ata	gat	gcc	cac	ttt	cta	tcc	2991
Glu	Gly	Val	Phe	Thr	Gly	Leu	Thr	His	Ile	Asp	Ala	His	Phe	Leu	Ser	
	320					325					330					
cag	aca	aag	cag	agt	ggg	gag	aac	ctt	cct	tac	ctg	gta	gcg	tac	caa	3039
Gln	Thr	Lys	Gln	Ser	Gly	Glu	Asn	Leu	Pro	Tyr	Leu	Val	Ala	Tyr	Gln	
	335				340					345					350	
gcc	acc	gtg	tgc	gct	agg	gct	caa	gcc	cct	ccc	cca	tcg	tgg	gac	cag	3087
Ala	Thr	Val	Cys	Ala	Arg	Ala	Gln	Ala	Pro	Pro	Pro	Ser	Trp	Asp	Gln	
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Met	Trp	Lys	Cys	Leu	Ile	Arg	Leu	Lys	Pro	Thr	Leu	His	Gly	Pro	Thr	
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Pro	Leu	Leu	Tyr	Arg	Leu	Gly	Ala	Val	Gln	Asn	Glu	Ile	Thr	Leu	Thr	
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cac	cca	gtc	acc	aaa	tac	atc	atg	aca	tgc	atg	tcg	gcc	gac	ctg	gag	3231
His	Pro	Val	Thr	Lys	Tyr	Ile	Met	Thr	Cys	Met	Ser	Ala	Asp	Leu	Glu	

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Val	Val	Thr	Ser	Thr	Trp	Val	Leu	Val	Gly	Gly	Val	Leu	Ala	Ala	Leu		
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gcc	gcg	tat	tgc	ctg	tca	aca	ggc	tgc	gtg	gtc	ata	gtg	ggc	agg	gtc	3327	
Ala	Ala	Tyr	Cys	Leu	Ser	Thr	Gly	Cys	Val	Val	Ile	Val	Gly	Arg	Val		
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Arg	Glu	Phe	Asp	Glu	Met	Glu	Glu	Cys	Ser	Gln	His	Leu	Pro	Tyr	Ile		
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Glu	Gln	Gly	Met	Met	Leu	Ala	Glu	Gln	Phe	Lys	Gln	Lys	Ala	Leu	Gly		
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ctc	ctg	cag	acc	gcg	tcc	cgt	cag	gca	gag	gtt	atc	gcc	cct	gct	gtc	3519	
Leu	Leu	Gln	Thr	Ala	Ser	Arg	Gln	Ala	Glu	Val	Ile	Ala	Pro	Ala	Val		
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Gln	Thr	Asn	Trp	Gln	Lys	Leu	Glu	Thr	Phe	Trp	Ala	Lys	His	Met	Trp		
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aac	ttc	atc	agt	ggg	ata	caa	tac	ttg	gcg	ggc	ttg	tca	acg	ctg	cct	3615	
Asn	Phe	Ile	Ser	Gly	Ile	Gln	Tyr	Leu	Ala	Gly	Leu	Ser	Thr	Leu	Pro		
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Ser	Pro	Leu	Thr	Thr	Ser	Gln	Thr	Leu	Leu	Phe	Asn	Ile	Leu	Gly	Gly		
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Trp	Val	Ala	Ala	Gln	Leu	Ala	Ala	Pro	Gly	Ala	Ala	Thr	Ala	Phe	Val		
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Gly	Ala	Gly	Leu	Ala	Gly	Ala	Ala	Ile	Gly	Ser	Val	Gly	Leu	Gly	Lys		
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Val	Leu	Ile	Asp	Ile	Leu	Ala	Gly	Tyr	Gly	Ala	Gly	Val	Ala	Gly	Ala		
610					615					620							
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Leu	Val	Ala	Phe	Lys	Ile	Met	Ser	Gly	Glu	Val	Pro	Ser	Thr	Glu	Asp		
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Leu Val Asn Leu Leu Pro Ala Ile Leu Ser Pro Gly Ala Leu Val Val	
640 645 650	
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Gly Val Val Cys Ala Ala Ile Leu Arg Arg His Val Gly Pro Gly Glu	
655 660 665 670	
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Gly Ala Val Gln Trp Met Asn Arg Leu Ile Ala Phe Ala Ser Arg Gly	
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Asn His Val Ser Pro Thr His Tyr Val Pro Glu Ser Asp Ala Ala Ala	
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Arg Val Thr Ala Ile Leu Ser Ser Leu Thr Val Thr Gln Leu Leu Arg	
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cga ctg cac cag tgg ata agc tgc gag tgt acc act cca tgc tcc ggt	4191
Arg Leu His Gln Trp Ile Ser Ser Glu Cys Thr Thr Pro Cys Ser Gly	
720 725 730	
tcc tgg cta agg gac atc tgg gac tgg ata tgc gag gtg ttg agc gac	4239
Ser Trp Leu Arg Asp Ile Trp Asp Trp Ile Cys Glu Val Leu Ser Asp	
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Phe Lys Thr Trp Leu Lys Ala Lys Leu Met Pro Gln Leu Pro Gly Ile	
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ccc ttt gtg tcc tgc cag cgc ggg tat aag ggg gtc tgg cga ggg gac	4335
Pro Phe Val Ser Cys Gln Arg Gly Tyr Lys Gly Val Trp Arg Gly Asp	
770 775 780	
ggc atc atg cac act cgc tgc cac tgt gga gct gag atc act gga cat	4383
Gly Ile Met His Thr Arg Cys His Cys Gly Ala Glu Ile Thr Gly His	
785 790 795	
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Val Lys Asn Gly Thr Met Arg Ile Val Gly Pro Arg Thr Cys Arg Asn	
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acc ccc ctt cct gcg ccg aac tac acg ttc gcg cta tgg agg gtg tct	4527
Thr Pro Leu Pro Ala Pro Asn Tyr Thr Phe Ala Leu Trp Arg Val Ser	
835 840 845	
gca gag gaa tac gtg gag ata agg cag gtg ggg gac ttc cac tac gtg	4575
Ala Glu Glu Tyr Val Glu Ile Arg Gln Val Gly Asp Phe His Tyr Val	
850 855 860	
acg ggt atg act act gac aat ctt aaa tgc ccg tgc cag gtc cca tgc	4623

Thr	Gly	Met	Thr	Thr	Asp	Asn	Leu	Lys	Cys	Pro	Cys	Gln	Val	Pro	Ser	
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Pro	Pro	Cys	Lys	Pro	Leu	Leu	Arg	Glu	Glu	Val	Ser	Phe	Arg	Val	Gly	
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Asp	Val	Ala	Val	Leu	Thr	Ser	Met	Leu	Thr	Asp	Pro	Ser	His	Ile	Thr	
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tgc	acc	gct	aac	cat	gac	tcc	cct	gat	gct	gag	ctc	ata	gag	gcc	aac	4959
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Glu	Asp	Glu	Arg	Glu	Ile	Ser	Val	Pro	Ala	Glu	Ile	Leu	Arg	Lys	Ser	
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Arg	Arg	Phe	Ala	Gln	Ala	Leu	Pro	Val	Trp	Ala	Arg	Pro	Asp	Tyr	Asn	
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Val	His	Gly	Cys	Pro	Leu	Pro	Pro	Pro	Lys	Ser	Pro	Pro	Val	Pro	Pro	
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Pro	Arg	Lys	Lys	Arg	Thr	Val	Val	Leu	Thr	Glu	Ser	Thr	Leu	Ser	Thr	

1100

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1315 1320 1325

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35 40 45
Ser Pro Ile Thr Tyr Ser Thr Tyr Gly Lys Phe Leu Ala Asp Gly Gly
50 55 60
Cys Ser Gly Gly Ala Tyr Asp Ile Ile Ile Cys Asp Glu Cys His Ser
65 70 75 80
Thr Asp Ala Thr Ser Ile Leu Gly Ile Gly Thr Val Leu Asp Gln Ala
85 90 95
Glu Thr Ala Gly Ala Arg Leu Val Val Leu Ala Thr Ala Thr Pro Pro
100 105 110
Gly Ser Val Thr Val Pro His Pro Asn Ile Glu Glu Val Ala Leu Ser
115 120 125
Thr Thr Gly Glu Ile Pro Phe Tyr Gly Lys Ala Ile Pro Leu Glu Val
130 135 140
Ile Lys Gly Gly Arg His Leu Ile Phe Cys His Ser Lys Lys Lys Cys
145 150 155 160
Asp Glu Leu Ala Ala Lys Leu Val Ala Leu Gly Ile Asn Ala Val Ala
165 170 175

1. The first part of the document is a list of names and their corresponding addresses. The names are listed in a column on the left, and the addresses are listed in a column on the right. The names are: John Doe, Jane Smith, and Bob Johnson. The addresses are: 123 Main St, 456 Elm St, and 789 Oak St.

Gly	Met	Met	Leu	Ala	Glu	Gln	Phe	Lys	Gln	Lys	Ala	Leu	Gly	Leu	Leu	485	490	495	
Gln	Thr	Ala	Ser	Arg	Gln	Ala	Glu	Val	Ile	Ala	Pro	Ala	Val	Gln	Thr	500	505	510	
Asn	Trp	Gln	Lys	Leu	Glu	Thr	Phe	Trp	Ala	Lys	His	Met	Trp	Asn	Phe	515	520	525	
Ile	Ser	Gly	Ile	Gln	Tyr	Leu	Ala	Gly	Leu	Ser	Thr	Leu	Pro	Gly	Asn	530	535	540	
Pro	Ala	Ile	Ala	Ser	Leu	Met	Ala	Phe	Thr	Ala	Ala	Val	Thr	Ser	Pro	545	550	555	560
Leu	Thr	Thr	Ser	Gln	Thr	Leu	Leu	Phe	Asn	Ile	Leu	Gly	Gly	Trp	Val	565	570	575	
Ala	Ala	Gln	Leu	Ala	Ala	Pro	Gly	Ala	Ala	Thr	Ala	Phe	Val	Gly	Ala	580	585	590	
Gly	Leu	Ala	Gly	Ala	Ala	Ile	Gly	Ser	Val	Gly	Leu	Gly	Lys	Val	Leu	595	600	605	
Ile	Asp	Ile	Leu	Ala	Gly	Tyr	Gly	Ala	Gly	Val	Ala	Gly	Ala	Leu	Val	610	615	620	
Ala	Phe	Lys	Ile	Met	Ser	Gly	Glu	Val	Pro	Ser	Thr	Glu	Asp	Leu	Val	625	630	635	640
Asn	Leu	Leu	Pro	Ala	Ile	Leu	Ser	Pro	Gly	Ala	Leu	Val	Val	Gly	Val	645	650	655	
Val	Cys	Ala	Ala	Ile	Leu	Arg	Arg	His	Val	Gly	Pro	Gly	Glu	Gly	Ala	660	665	670	
Val	Gln	Trp	Met	Asn	Arg	Leu	Ile	Ala	Phe	Ala	Ser	Arg	Gly	Asn	His	675	680	685	
Val	Ser	Pro	Thr	His	Tyr	Val	Pro	Glu	Ser	Asp	Ala	Ala	Ala	Arg	Val	690	695	700	
Thr	Ala	Ile	Leu	Ser	Ser	Leu	Thr	Val	Thr	Gln	Leu	Leu	Arg	Arg	Leu	705	710	715	720
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Leu	Arg	Asp	Ile	Trp	Asp	Trp	Ile	Cys	Glu	Val	Leu	Ser	Asp	Phe	Lys	740	745	750	
Thr	Trp	Leu	Lys	Ala	Lys	Leu	Met	Pro	Gln	Leu	Pro	Gly	Ile	Pro	Phe	755	760	765	
Val	Ser	Cys	Gln	Arg	Gly	Tyr	Lys	Gly	Val	Trp	Arg	Gly	Asp	Gly	Ile	770	775	780	

002447.164260

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Phe	Phe	Thr	Glu	Leu	Asp	Gly	Val	Arg	Leu	His	Arg	Phe	Ala	Pro	Pro
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Cys	Lys	Pro	Leu	Leu	Arg	Glu	Glu	Val	Ser	Phe	Arg	Val	Gly	Leu	His
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Glu	Tyr	Pro	Val	Gly	Ser	Gln	Leu	Pro	Cys	Glu	Pro	Glu	Pro	Asp	Val
		915					920							925	
Ala	Val	Leu	Thr	Ser	Met	Leu	Thr	Asp	Pro	Ser	His	Ile	Thr	Ala	Glu
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Glu	Arg	Glu	Ile	Ser	Val	Pro	Ala	Glu	Ile	Leu	Arg	Lys	Ser	Arg	Arg
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Tyr Val Gly Gly Pro Leu Thr Asn Ser Arg Gly Glu Asn Cys Gly Tyr	
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Arg Arg Cys Arg Ala Ser Gly Val Leu Thr Thr Ser Cys Gly Asn Thr	
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Glu Tyr Asp Leu Glu Leu Ile Thr Ser Cys Ser Ser Asn Val Ser Val	
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Ala His Asp Gly Ala Gly Lys Arg Val Tyr Tyr Leu Thr Arg Asp Pro	
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Thr Thr Pro Leu Ala Arg Ala Ala Trp Glu Thr Ala Arg His Thr Pro	
	1570 1575 1580
Val Asn Ser Trp Leu Gly Asn Ile Ile Met Phe Ala Pro Thr Leu Trp	
585	1590 1595 1600
Ala Arg Met Ile Leu Met Thr His Phe Phe Ser Val Leu Ile Ala Arg	
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Asp Gln Leu Glu Gln Ala Leu Asp Cys Glu Ile Tyr Gly Ala Cys Tyr	
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Ser Ile Glu Pro Leu Asp Leu Pro Pro Ile Ile Gln Arg Leu His Gly	
	1635 1640 1645
Leu Ser Ala Phe Ser Leu His Ser Tyr Ser Pro Gly Glu Ile Asn Arg	
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Val Ala Ala Cys Leu Arg Lys Leu Gly Val Pro Pro Leu Arg Ala Trp	
665	1670 1675 1680
Arg His Arg Ala Arg Ser Val Arg Ala Arg Leu Leu Ala Arg Gly Gly	
	1685 1690 1695

Arg Ala Ala Ile Cys Gly Lys Tyr Leu Phe Asn Trp Ala Val Arg Thr
 1700 1705 1710

Lys Leu Lys Leu Thr Pro Ile Ala Ala Ala Gly Gln Leu Asp Leu Ser
 1715 1720 1725

Gly Trp Phe Thr Ala Gly Tyr Ser Gly Gly Asp Ile Tyr His Ser Val
 1730 1735 1740

Ser His Ala Arg Pro Arg Trp Ile Trp Phe Cys Leu Leu Leu Leu Ala
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<210> 5

<211> 4282

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: pCMVII

<400> 5

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accatatgaa gctttttgca aaagcctagg cctcgaataa agcctcctca ctacttctgg 240

aatagctcag aggccgaggc ggcctcggcc tctgcataaa taaaaaaaaat tagtcagcca 300

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acgttgtatc tatatcataa tatgtacatt tatattggct catgtccaat atgaccgcca 420

tgttgacatt gattattgac tagttattaa tagtaatcaa ttacgggggc attagttcat 480

agcccatata tggagttccg cgttacataa ctacgggtaa atggcccgcc tggctgaccg 540

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gcctggcatt atgcccagta catgacctta cgggactttc ctacttggca gtacatctac 780

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<211> 6299

<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: pNS34a

<220>

<221> CDS

<222> (1990)..(4047)

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 Thr Cys Ile Asn Gly Val Cys Trp Thr Val Tyr His Gly Ala Gly Thr
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 Arg Thr Ile Ala Ser Pro Lys Gly Pro Val Ile Gln Met Tyr Thr Asn
 65 70 75
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 Leu Thr Pro Cys Thr Cys Gly Ser Ser Asp Leu Tyr Leu Val Thr Arg
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 cac gcc gat gtc att ccc gtg cgc cgg cgg ggt gat agc agg ggc agc 2367
 His Ala Asp Val Ile Pro Val Arg Arg Arg Gly Asp Ser Arg Gly Ser
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 Leu Leu Ser Pro Arg Pro Ile Ser Tyr Leu Lys Gly Ser Ser Gly Gly
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Asn	Leu	Glu	Thr	Thr	Met	Arg	Ser	Pro	Val	Phe	Thr	Asp	Asn	Ser	Ser		
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Pro	Pro	Val	Val	Pro	Gln	Ser	Phe	Gln	Val	Ala	His	Leu	His	Ala	Pro		
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Tyr	Gly	Lys	Phe	Leu	Ala	Asp	Gly	Gly	Cys	Ser	Gly	Gly	Ala	Tyr	Asp		
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Ile	Ile	Ile	Cys	Asp	Glu	Cys	His	Ser	Thr	Asp	Ala	Thr	Ser	Ile	Leu		
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Gly	Ile	Gly	Thr	Val	Leu	Asp	Gln	Ala	Glu	Thr	Ala	Gly	Ala	Arg	Leu		
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370										375					380					
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480						485			490											
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Pro	Tyr	Leu	Val	Ala	Tyr	Gln	Ala	Thr	Val	Cys	Ala	Arg	Ala	Gln	Ala					
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Pro	Pro	Pro	Ser	Trp	Asp	Gln	Met	Trp	Lys	Cys	Leu	Ile	Arg	Leu	Lys					
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 Pro Asp Arg Glu Val Leu Tyr Arg Glu Phe Asp Glu Met Glu Glu Cys
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002249.1200

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Met Ala Ala Tyr Ala Ala Gln Gly Tyr
1 5
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Lys Val Leu Val Leu Asn Pro Ser Val Ala Ala Thr Leu Gly Phe Gly
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gct tac atg tcc aag gct cat ggg atc gat cct aac atc agg acc ggg 12867
Ala Tyr Met Ser Lys Ala His Gly Ile Asp Pro Asn Ile Arg Thr Gly
30 35 40
gtg aga aca att acc act ggc agc ccc atc acg tac tcc acc tac ggc 12915
Val Arg Thr Ile Thr Thr Gly Ser Pro Ile Thr Tyr Ser Thr Tyr Gly
45 50 55
aag ttc ctt gcc gac ggc ggg tgc tgc ggg ggc gct tat gac ata ata 12963
Lys Phe Leu Ala Asp Gly Gly Cys Ser Gly Gly Ala Tyr Asp Ile Ile
60 65 70

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Ile Cys Asp Glu Cys His Ser Thr Asp Ala Thr Ser Ile Leu Gly Ile	
75 80 85	
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Gly Thr Val Leu Asp Gln Ala Glu Thr Ala Gly Ala Arg Leu Val Val	
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ctc gcc acc gcc acc cct ccg ggc tcc gtc act gtg ccc cat ccc aac	13107
Leu Ala Thr Ala Thr Pro Pro Gly Ser Val Thr Val Pro His Pro Asn	
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Lys Ala Ile Pro Leu Glu Val Ile Lys Gly Gly Arg His Leu Ile Phe	
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Cys His Ser Lys Lys Lys Cys Asp Glu Leu Ala Ala Lys Leu Val Ala	
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Leu Gly Ile Asn Ala Val Ala Tyr Tyr Arg Gly Leu Asp Val Ser Val	
170 175 180 185	
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Ile Pro Thr Ser Gly Asp Val Val Val Val Ala Thr Asp Ala Leu Met	
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Thr Gly Tyr Thr Gly Asp Phe Asp Ser Val Ile Asp Cys Asn Thr Cys	
205 210 215	
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Val Thr Gln Thr Val Asp Phe Ser Leu Asp Pro Thr Phe Thr Ile Glu	
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Thr Ile Thr Leu Pro Gln Asp Ala Val Ser Arg Thr Gln Arg Arg Gly	
235 240 245	
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Arg Thr Gly Arg Gly Lys Pro Gly Ile Tyr Arg Phe Val Ala Pro Gly	
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Glu Arg Pro Ser Gly Met Phe Asp Ser Ser Val Leu Cys Glu Cys Tyr	
270 275 280	
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Asp Ala Gly Cys Ala Trp Tyr Glu Leu Thr Pro Ala Glu Thr Thr Val	
285 290 295	
agg cta cga gcg tac atg aac acc ccg ggg ctt ccc gtg tgc cag gac	13683

Arg	Leu	Arg	Ala	Tyr	Met	Asn	Thr	Pro	Gly	Leu	Pro	Val	Cys	Gln	Asp	
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cat	ctt	gaa	ttt	tgg	gag	ggc	gtc	ttt	aca	ggc	ctc	act	cat	ata	gat	13731
His	Leu	Glu	Phe	Trp	Glu	Gly	Val	Phe	Thr	Gly	Leu	Thr	His	Ile	Asp	
	315					320					325					
gcc	cac	ttt	cta	tcc	cag	aca	aag	cag	agt	ggg	gag	aac	ctt	cct	tac	13779
Ala	His	Phe	Leu	Ser	Gln	Thr	Lys	Gln	Ser	Gly	Glu	Asn	Leu	Pro	Tyr	
	330				335					340					345	
ctg	gta	gcg	tac	caa	gcc	acc	gtg	tgc	gct	agg	gct	caa	gcc	cct	ccc	13827
Leu	Val	Ala	Tyr	Gln	Ala	Thr	Val	Cys	Ala	Arg	Ala	Gln	Ala	Pro	Pro	
				350					355						360	
cca	tcg	tgg	gac	cag	atg	tgg	aag	tgt	ttg	att	cgc	ctc	aag	ccc	acc	13875
Pro	Ser	Trp	Asp	Gln	Met	Trp	Lys	Cys	Leu	Ile	Arg	Leu	Lys	Pro	Thr	
			365					370					375			
ctc	cat	ggg	cca	aca	ccc	ctg	cta	tac	aga	ctg	ggc	gct	gtt	cag	aat	13923
Leu	His	Gly	Pro	Thr	Pro	Leu	Leu	Tyr	Arg	Leu	Gly	Ala	Val	Gln	Asn	
		380					385					390				
gaa	atc	acc	ctg	acg	cac	cca	gtc	acc	aaa	tac	atc	atg	aca	tgc	atg	13971
Glu	Ile	Thr	Leu	Thr	His	Pro	Val	Thr	Lys	Tyr	Ile	Met	Thr	Cys	Met	
	395					400					405					
tcg	gcc	gac	ctg	gag	gtc	gtc	acg	agc	acc	tgg	gtg	ctc	gtt	ggc	ggc	14019
Ser	Ala	Asp	Leu	Glu	Val	Val	Thr	Ser	Thr	Trp	Val	Leu	Val	Gly	Gly	
	410				415					420				425		
gtc	ctg	gct	gct	ttg	gcc	gcg	tat	tgc	ctg	tca	aca	ggc	tgc	gtg	gtc	14067
Val	Leu	Ala	Ala	Leu	Ala	Ala	Tyr	Cys	Leu	Ser	Thr	Gly	Cys	Val	Val	
				430					435					440		
ata	gtg	ggc	agg	gtc	gtc	ttg	tcc	ggg	aag	ccg	gca	atc	ata	cct	gac	14115
Ile	Val	Gly	Arg	Val	Val	Leu	Ser	Gly	Lys	Pro	Ala	Ile	Ile	Pro	Asp	
			445					450					455			
agg	gaa	gtc	ctc	tac	cga	gag	ttc	gat	gag	atg	gaa	gag	tgc	tct	cag	14163
Arg	Glu	Val	Leu	Tyr	Arg	Glu	Phe	Asp	Glu	Met	Glu	Glu	Cys	Ser	Gln	
		460					465					470				
cac	tta	ccg	tac	atc	gag	caa	ggg	atg	atg	ctc	gcc	gag	cag	ttc	aag	14211
His	Leu	Pro	Tyr	Ile	Glu	Gln	Gly	Met	Met	Leu	Ala	Glu	Gln	Phe	Lys	
	475					480					485					
cag	aag	gcc	ctc	ggc	ctc	ctg	cag	acc	gcg	tcc	cgt	cag	gca	gag	gtt	14259
Gln	Lys	Ala	Leu	Gly	Leu	Leu	Gln	Thr	Ala	Ser	Arg	Gln	Ala	Glu	Val	
	490				495					500					505	
atc	gcc	cct	gct	gtc	cag	acc	aac	tgg	caa	aaa	ctc	gag	acc	ttc	tgg	14307
Ile	Ala	Pro	Ala	Val	Gln	Thr	Asn	Trp	Gln	Lys	Leu	Glu	Thr	Phe	Trp	
				510					515					520		
gcg	aag	cat	atg	tgg	aac	ttc	atc	agt	ggg	ata	caa	tac	ttg	gcg	ggc	14355
Ala	Lys	His	Met	Trp	Asn	Phe	Ile	Ser	Gly	Ile	Gln	Tyr	Leu	Ala	Gly	

525					530					535					
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Leu Ser Thr Leu Pro Gly Asn Pro Ala Ile Ala Ser Leu Met Ala Phe															
540 545 550															
aca gct gct gtc acc agc cca cta acc act agc caa acc ctc ctc ttc	14451														
Thr Ala Ala Val Thr Ser Pro Leu Thr Thr Ser Gln Thr Leu Leu Phe															
555 560 565															
aac ata ttg ggg ggg tgg gtg gct gcc cag ctc gcc gcc ccc ggt gcc	14499														
Asn Ile Leu Gly Gly Trp Val Ala Ala Gln Leu Ala Ala Pro Gly Ala															
570 575 580 585															
gct act gcc ttt gtg ggc gct ggc tta gct ggc gcc gcc atc ggc agt	14547														
Ala Thr Ala Phe Val Gly Ala Gly Leu Ala Gly Ala Ala Ile Gly Ser															
590 595 600															
gtt gga ctg ggg aag gtc ctc ata gac atc ctt gca ggg tat ggc gcg	14595														
Val Gly Leu Gly Lys Val Leu Ile Asp Ile Leu Ala Gly Tyr Gly Ala															
605 610 615															
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Gly Val Ala Gly Ala Leu Val Ala Phe Lys Ile Met Ser Gly Glu Val															
620 625 630															
ccc tcc acg gag gac ctg gtc aat cta ctg ccc gcc atc ctc tcg ccc	14691														
Pro Ser Thr Glu Asp Leu Val Asn Leu Leu Pro Ala Ile Leu Ser Pro															
635 640 645															
gga gcc ctc gta gtc ggc gtg gtc tgt gca gca ata ctg cgc cgg cac	14739														
Gly Ala Leu Val Val Gly Val Val Cys Ala Ala Ile Leu Arg Arg His															
650 655 660 665															
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Val Gly Pro Gly Glu Gly Ala Val Gln Trp Met Asn Arg Leu Ile Ala															
670 675 680															
ttc gcc tcc cgg ggg aac cat gtt tcc ccc acg cac tac gtg ccg gag	14835														
Phe Ala Ser Arg Gly Asn His Val Ser Pro Thr His Tyr Val Pro Glu															
685 690 695															
agc gat gca gct gcc cgc gtc act gcc ata ctc agc agc ctc act gta	14883														
Ser Asp Ala Ala Ala Arg Val Thr Ala Ile Leu Ser Ser Leu Thr Val															
700 705 710															
acc cag ctc ctg agg cga ctg cac cag tgg ata agc tcg gag tgt acc	14931														
Thr Gln Leu Leu Arg Arg Leu His Gln Trp Ile Ser Ser Glu Cys Thr															
715 720 725															
act cca tgc tcc ggt tcc tgg cta agg gac atc tgg gac tgg ata tgc	14979														
Thr Pro Cys Ser Gly Ser Trp Leu Arg Asp Ile Trp Asp Trp Ile Cys															
730 735 740 745															
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Glu Val Leu Ser Asp Phe Lys Thr Trp Leu Lys Ala Lys Leu Met Pro															
750 755 760															

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Gln Leu Pro Gly Ile Pro Phe Val Ser Cys Gln Arg Gly Tyr Lys Gly	
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Val Trp Arg Gly Asp Gly Ile Met His Thr Arg Cys His Cys Gly Ala	
780 785 790	
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Glu Ile Thr Gly His Val Lys Asn Gly Thr Met Arg Ile Val Gly Pro	
795 800 805	
agg acc tgc agg aac atg tgg agt ggg acc ttc ccc att aat gcc tac	15219
Arg Thr Cys Arg Asn Met Trp Ser Gly Thr Phe Pro Ile Asn Ala Tyr	
810 815 820 825	
acc acg ggc ccc tgt acc ccc ctt cct gcg ccg aac tac acg ttc gcg	15267
Thr Thr Gly Pro Cys Thr Pro Leu Pro Ala Pro Asn Tyr Thr Phe Ala	
830 835 840	
cta tgg agg gtg tct gca gag gaa tac gtg gag ata agg cag gtg ggg	15315
Leu Trp Arg Val Ser Ala Glu Glu Tyr Val Glu Ile Arg Gln Val Gly	
845 850 855	
gac ttc cac tac gtg acg ggt atg act act gac aat ctt aaa tgc ccg	15363
Asp Phe His Tyr Val Thr Gly Met Thr Thr Asp Asn Leu Lys Cys Pro	
860 865 870	
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Cys Gln Val Pro Ser Pro Glu Phe Phe Thr Glu Leu Asp Gly Val Arg	
875 880 885	
cta cat agg ttt gcg ccc ccc tgc aag ccc ttg ctg cgg gag gag gta	15459
Leu His Arg Phe Ala Pro Pro Cys Lys Pro Leu Leu Arg Glu Glu Val	
890 895 900 905	
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Ser Phe Arg Val Gly Leu His Glu Tyr Pro Val Gly Ser Gln Leu Pro	
910 915 920	
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Cys Glu Pro Glu Pro Asp Val Ala Val Leu Thr Ser Met Leu Thr Asp	
925 930 935	
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Pro Ser His Ile Thr Ala Glu Ala Ala Gly Arg Arg Leu Ala Arg Gly	
940 945 950	
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Ser Pro Pro Ser Val Ala Ser Ser Ser Ala Ser Gln Leu Ser Ala Pro	
955 960 965	
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Ser Leu Lys Ala Thr Cys Thr Ala Asn His Asp Ser Pro Asp Ala Glu	
970 975 980 985	
ctc ata gag gcc aac ctc cta tgg agg cag gag atg ggc ggc aac atc	15747

Leu Ile Glu Ala Asn Leu Leu Trp Arg Gln Glu Met Gly Gly Asn Ile	
990 995 1000	
acc agg gtt gag tca gaa aac aaa gtg gtg att ctg gac tcc ttc gat	15795
Thr Arg Val Glu Ser Glu Asn Lys Val Val Ile Leu Asp Ser Phe Asp	
1005 1010 1015	
ccg ctt gtg gcg gag gag gac gag cgg gag atc tcc gta ccc gca gaa	15843
Pro Leu Val Ala Glu Glu Asp Glu Arg Glu Ile Ser Val Pro Ala Glu	
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atc ctg cgg aag tct cgg aga ttc gcc cag gcc ctg ccc gtt tgg gcg	15891
Ile Leu Arg Lys Ser Arg Arg Phe Ala Gln Ala Leu Pro Val Trp Ala	
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Arg Pro Asp Tyr Asn Pro Pro Leu Val Glu Thr Trp Lys Lys Pro Asp	
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Tyr Glu Pro Pro Val Val His Gly Cys Pro Leu Pro Pro Pro Lys Ser	
1070 1075 1080	
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Pro Pro Val Pro Pro Pro Arg Lys Lys Arg Thr Val Val Leu Thr Glu	
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Ser Thr Leu Ser Thr Ala Leu Ala Glu Leu Ala Thr Arg Ser Phe Gly	
1100 1105 1110	
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Ser Ser Ser Thr Ser Gly Ile Thr Gly Asp Asn Thr Thr Thr Ser Ser	
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Glu Pro Ala Pro Ser Gly Cys Pro Pro Asp Ser Asp Ala Glu Ser Tyr	
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Ser Ser Met Pro Pro Leu Glu Gly Glu Pro Gly Asp Pro Asp Leu Ser	
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Asp Gly Ser Trp Ser Thr Val Ser Ser Glu Ala Asn Ala Glu Asp Val	
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Val Cys Cys Ser Met Ser Tyr Ser Trp Thr Gly Ala Leu Val Thr Pro	
1180 1185 1190	
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Cys Ala Ala Glu Glu Gln Lys Leu Pro Ile Asn Ala Leu Ser Asn Ser	
1195 1200 1205	
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Leu Leu Arg His His Asn Leu Val Tyr Ser Thr Thr Ser Arg Ser Ala	

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Cys Gln Arg Gln Lys Lys Val Thr Phe Asp Arg Leu Gln Val Leu Asp				
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agc cat tac cag gac gta ctc aag gag gtt aaa gca gcg gcg tca aaa				16515
Ser His Tyr Gln Asp Val Leu Lys Glu Val Lys Ala Ala Ala Ser Lys				
1245	1250	1255		
gtg aag gct aac ttg cta tcc gta gag gaa gct tgc agc ctg acg ccc				16563
Val Lys Ala Asn Leu Leu Ser Val Glu Glu Ala Cys Ser Leu Thr Pro				
1260	1265	1270		
cca cac tca gcc aaa tcc aag ttt ggt tat ggg gca aaa gac gtc cgt				16611
Pro His Ser Ala Lys Ser Lys Phe Gly Tyr Gly Ala Lys Asp Val Arg				
1275	1280	1285		
tgc cat gcc aga aag gcc gta acc cac atc aac tcc gtg tgg aaa gac				16659
Cys His Ala Arg Lys Ala Val Thr His Ile Asn Ser Val Trp Lys Asp				
1290	1295	1300	1305	
ctt ctg gaa gac aat gta aca cca ata gac act acc atc atg gct aag				16707
Leu Leu Glu Asp Asn Val Thr Pro Ile Asp Thr Thr Ile Met Ala Lys				
1310	1315	1320		
aac gag gtt ttc tgc gtt cag cct gag aag ggg ggt cgt aag cca gct				16755
Asn Glu Val Phe Cys Val Gln Pro Glu Lys Gly Gly Arg Lys Pro Ala				
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Arg Leu Ile Val Phe Pro Asp Leu Gly Val Arg Val Cys Glu Lys Met				
1340	1345	1350		
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Ala Leu Tyr Asp Val Val Thr Lys Leu Pro Leu Ala Val Met Gly Ser				
1355	1360	1365		
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Ser Tyr Gly Phe Gln Tyr Ser Pro Gly Gln Arg Val Glu Phe Leu Val				
1370	1375	1380	1385	
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Gln Ala Trp Lys Ser Lys Lys Thr Pro Met Gly Phe Ser Tyr Asp Thr				
1390	1395	1400		
cgc tgc ttt gac tcc aca gtc act gag agc gac atc cgt acg gag gag				16995
Arg Cys Phe Asp Ser Thr Val Thr Glu Ser Asp Ile Arg Thr Glu Glu				
1405	1410	1415		
gca atc tac caa tgt tgt gac ctc gac ccc caa gcc cgc gtg gcc atc				17043
Ala Ile Tyr Gln Cys Cys Asp Leu Asp Pro Gln Ala Arg Val Ala Ile				
1420	1425	1430		
aag tcc ctc acc gag agg ctt tat gtt ggg ggc cct ctt acc aat tca				17091
Lys Ser Leu Thr Glu Arg Leu Tyr Val Gly Gly Pro Leu Thr Asn Ser				
1435	1440	1445		

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Arg Gly Glu Asn Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu	
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aca act agc tgt ggt aac acc ctc act tgc tac atc aag gcc cgg gca	17187
Thr Thr Ser Cys Gly Asn Thr Leu Thr Cys Tyr Ile Lys Ala Arg Ala	
1470 1475 1480	
gcc tgt cga gcc gca ggg ctc cag gac tgc acc atg ctc gtg tgt ggc	17235
Ala Cys Arg Ala Ala Gly Leu Gln Asp Cys Thr Met Leu Val Cys Gly	
1485 1490 1495	
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Asp Asp Leu Val Val Ile Cys Glu Ser Ala Gly Val Gln Glu Asp Ala	
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gcg agc ctg aga gcc ttc acg gag gct atg acc agg tac tcc gcc ccc	17331
Ala Ser Leu Arg Ala Phe Thr Glu Ala Met Thr Arg Tyr Ser Ala Pro	
1515 1520 1525	
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Pro Gly Asp Pro Pro Gln Pro Glu Tyr Asp Leu Glu Leu Ile Thr Ser	
1530 1535 1540 1545	
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Cys Ser Ser Asn Val Ser Val Ala His Asp Gly Ala Gly Lys Arg Val	
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Tyr Tyr Leu Thr Arg Asp Pro Thr Thr Pro Leu Ala Arg Ala Ala Trp	
1565 1570 1575	
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Glu Thr Ala Arg His Thr Pro Val Asn Ser Trp Leu Gly Asn Ile Ile	
1580 1585 1590	
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Met Phe Ala Pro Thr Leu Trp Ala Arg Met Ile Leu Met Thr His Phe	
1595 1600 1605	
ttt agc gtc ctt ata gcc agg gac cag ctt gaa cag gcc ctc gat tgc	17619
Phe Ser Val Leu Ile Ala Arg Asp Gln Leu Glu Gln Ala Leu Asp Cys	
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Glu Ile Tyr Gly Ala Cys Tyr Ser Ile Glu Pro Leu Asp Leu Pro Pro	
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atc att caa aga ctc cat ggc ctc agc gca ttt tca ctc cac agt tac	17715
Ile Ile Gln Arg Leu His Gly Leu Ser Ala Phe Ser Leu His Ser Tyr	
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tct cca ggt gaa atc aat agg gtg gcc gca tgc ctc aga aaa ctt ggg	17763
Ser Pro Gly Glu Ile Asn Arg Val Ala Ala Cys Leu Arg Lys Leu Gly	
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Val	Pro	Pro	Leu	Arg	Ala	Trp	Arg	His	Arg	Ala	Arg	Ser	Val	Arg	Ala	
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agg	ctt	ctg	gcc	aga	gga	ggc	agg	gct	gcc	ata	tgt	ggc	aag	tac	ctc	17859
Arg	Leu	Leu	Ala	Arg	Gly	Gly	Arg	Ala	Ala	Ile	Cys	Gly	Lys	Tyr	Leu	
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Phe	Asn	Trp	Ala	Val	Arg	Thr	Lys	Leu	Lys	Leu	Thr	Pro	Ile	Ala	Ala	
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Asn	Arg															
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<220>
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50 55 60
Cys Ser Gly Gly Ala Tyr Asp Ile Ile Ile Cys Asp Glu Cys His Ser
65 70 75 80

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Ser	Leu	Asp	Pro	Thr	Phe	Thr	Ile	Glu	Thr	Ile	Thr	Leu	Pro	Gln	Asp	
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Leu Val Leu Asn Pro Ser Val Ala Ala Thr Leu Gly Phe Gly Ala Tyr
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Met Ser Lys Ala His Gly Ile Asp Pro Asn Ile Arg Thr Gly Val Arg
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aca att acc act ggc agc ccc atc acg tac tcc acc tac ggc aag ttc 12855
Thr Ile Thr Thr Gly Ser Pro Ile Thr Tyr Ser Thr Tyr Gly Lys Phe
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ctt gcc gac ggc ggg tgc tgc ggg ggc gct tat gac ata ata att tgt 12903
Leu Ala Asp Gly Gly Cys Ser Gly Gly Ala Tyr Asp Ile Ile Ile Cys
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gac gag tgc cac tcc acg gat gcc aca tcc atc ttg ggc att ggc act 12951
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gtc ctt gac caa gca gag act gcg ggc gcg aga ctg gtt gtg ctc gcc 12999
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Thr Ala Thr Pro Pro Gly Ser Val Thr Val Pro His Pro Asn Ile Glu
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Ile Pro Leu Glu Val Ile Lys Gly Gly Arg His Leu Ile Phe Cys His
140 145 150 155
tca aag aag aag tgc gac gaa ctc gcc gca aag ctg gtc gca ttg ggc 13191
Ser Lys Lys Lys Cys Asp Glu Leu Ala Ala Lys Leu Val Ala Leu Gly
160 165 170
atc aat gcc gtg gcc tac tac cgc ggt ctt gac gtg tcc gtc atc ccg 13239
Ile Asn Ala Val Ala Tyr Tyr Arg Gly Leu Asp Val Ser Val Ile Pro
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Thr Ser Gly Asp Val Val Val Val Ala Thr Asp Ala Leu Met Thr Gly
190 195 200

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Tyr Thr Gly Asp Phe Asp Ser Val Ile Asp Cys Asn Thr Cys Val Thr	
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Gln Thr Val Asp Phe Ser Leu Asp Pro Thr Phe Thr Ile Glu Thr Ile	
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Pro Ser Gly Met Phe Asp Ser Ser Val Leu Cys Glu Cys Tyr Asp Ala	
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Arg Ala Tyr Met Asn Thr Pro Gly Leu Pro Val Cys Gln Asp His Leu	
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Phe Leu Ser Gln Thr Lys Gln Ser Gly Glu Asn Leu Pro Tyr Leu Val	
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Ala Tyr Gln Ala Thr Val Cys Ala Arg Ala Gln Ala Pro Pro Pro Ser	
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Trp Asp Gln Met Trp Lys Cys Leu Ile Arg Leu Lys Pro Thr Leu His	
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Gly Pro Thr Pro Leu Leu Tyr Arg Leu Gly Ala Val Gln Asn Glu Ile	
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Thr Leu Thr His Pro Val Thr Lys Tyr Ile Met Thr Cys Met Ser Ala	
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Val	Leu	Tyr	Arg	Glu	Phe	Asp	Glu	Met	Glu	Glu	Cys	Ser	Gln	His	Leu		
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Pro	Tyr	Ile	Glu	Gln	Gly	Met	Met	Leu	Ala	Glu	Gln	Phe	Lys	Gln	Lys		
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Ala	Leu	Gly	Leu	Leu	Gln	Thr	Ala	Ser	Arg	Gln	Ala	Glu	Val	Ile	Ala		
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Pro	Ala	Val	Gln	Thr	Asn	Trp	Gln	Lys	Leu	Glu	Thr	Phe	Trp	Ala	Lys		
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Thr	Leu	Pro	Gly	Asn	Pro	Ala	Ile	Ala	Ser	Leu	Met	Ala	Phe	Thr	Ala		
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Ala	Val	Thr	Ser	Pro	Leu	Thr	Thr	Ser	Gln	Thr	Leu	Leu	Phe	Asn	Ile		
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Thr	Glu	Asp	Leu	Val	Asn	Leu	Leu	Pro	Ala	Ile	Leu	Ser	Pro	Gly	Ala		
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Pro	Gly	Glu	Gly	Ala	Val	Gln	Trp	Met	Asn	Arg	Leu	Ile	Ala	Phe	Ala					
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gca	gct	gcc	cgc	gtc	act	gcc	ata	ctc	agc	agc	ctc	act	gta	acc	cag	14823				
Ala	Ala	Ala	Arg	Val	Thr	Ala	Ile	Leu	Ser	Ser	Leu	Thr	Val	Thr	Gln					
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ctc	ctg	agg	cga	ctg	cac	cag	tgg	ata	agc	tgc	gag	tgt	acc	act	cca	14871				
Leu	Leu	Arg	Arg	Leu	His	Gln	Trp	Ile	Ser	Ser	Glu	Cys	Thr	Thr	Pro					
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Cys	Ser	Gly	Ser	Trp	Leu	Arg	Asp	Ile	Trp	Asp	Trp	Ile	Cys	Glu	Val					
735										740					745					
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Cys	Arg	Asn	Met	Trp	Ser	Gly	Thr	Phe	Pro	Ile	Asn	Ala	Tyr	Thr	Thr					
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gtc	cca	tgc	ccc	gaa	ttt	ctc	aca	gaa	ttg	gac	ggg	gtg	cgc	cta	cat	15351				
Val	Pro	Ser	Pro	Glu	Phe	Phe	Thr	Glu	Leu	Asp	Gly	Val	Arg	Leu	His					
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Pro Glu Pro Asp Val Ala Val Leu Thr Ser Met Leu Thr Asp Pro Ser	
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His Ile Thr Ala Glu Ala Ala Gly Arg Arg Leu Ala Arg Gly Ser Pro	
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Pro Ser Val Ala Ser Ser Ser Ala Ser Gln Leu Ser Ala Pro Ser Leu	
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Lys Ala Thr Cys Thr Ala Asn His Asp Ser Pro Asp Ala Glu Leu Ile	
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Pro Pro Val Val His Gly Cys Pro Leu Pro Pro Pro Lys Ser Pro Pro	
1070 1075 1080	
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Val Pro Pro Pro Arg Lys Lys Arg Thr Val Val Leu Thr Glu Ser Thr	
1085 1090 1095	
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Trp Lys Ser Lys Lys Thr Pro Met Gly Phe Ser	Tyr Asp Thr Arg Cys			
1390	1395	1400		
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Phe Asp Ser Thr Val Thr Glu Ser Asp Ile Arg	Thr Glu Glu Ala Ile			
1405	1410	1415		
tac caa tgt tgt gac ctc gac ccc caa gcc cgc	gtg gcc atc aag tcc	16983		
Tyr Gln Cys Cys Asp Leu Asp Pro Gln Ala Arg	Val Ala Ile Lys Ser			
1420	1425	1430	1435	
ctc acc gag agg ctt tat gtt ggg ggc cct ctt	acc aat tca agg ggg	17031		
Leu Thr Glu Arg Leu Tyr Val Gly Gly Pro Leu	Thr Asn Ser Arg Gly			
1440	1445	1450		
gag aac tgc ggc tat cgc agg tgc cgc gcg agc	ggc gta ctg aca act	17079		
Glu Asn Cys Gly Tyr Arg Arg Cys Arg Ala Ser	Gly Val Leu Thr Thr			
1455	1460	1465		
agc tgt ggt aac acc ctc act tgc tac atc aag	gcc cgg gca gcc tgt	17127		
Ser Cys Gly Asn Thr Leu Thr Cys Tyr Ile Lys	Ala Arg Ala Ala Cys			
1470	1475	1480		
cga gcc gca ggg ctc cag gac tgc acc atg ctc	gtg tgt ggc gac gac	17175		
Arg Ala Ala Gly Leu Gln Asp Cys Thr Met Leu	Val Cys Gly Asp Asp			
1485	1490	1495		
tta gtc gtt atc tgt gaa agc gcg ggg gtc cag	gag gac gcg gcg agc	17223		
Leu Val Val Ile Cys Glu Ser Ala Gly Val Gln	Glu Asp Ala Ala Ser			
1500	1505	1510	1515	
ctg aga gcc ttc acg gag gct atg acc agg tac	tcc gcc ccc cct ggg	17271		
Leu Arg Ala Phe Thr Glu Ala Met Thr Arg Tyr	Ser Ala Pro Pro Gly			
1520	1525	1530		
gac ccc cca caa cca gaa tac gac ttg gag ctc	ata aca tca tgc tcc	17319		
Asp Pro Pro Gln Pro Glu Tyr Asp Leu Glu Leu	Ile Thr Ser Cys Ser			
1535	1540	1545		
tcc aac gtg tca gtc gcc cac gac ggc gct gga	aag agg gtc tac tac	17367		
Ser Asn Val Ser Val Ala His Asp Gly Ala Gly	Lys Arg Val Tyr Tyr			
1550	1555	1560		
ctc acc cgt gac cct aca acc ccc ctc gcg aga	gct gcg tgg gag aca	17415		
Leu Thr Arg Asp Pro Thr Thr Pro Leu Ala Arg	Ala Ala Trp Glu Thr			
1565	1570	1575		

gca aga cac act cca gtc aat tcc tgg cta ggc aac ata atc atg ttt 17463
Ala Arg His Thr Pro Val Asn Ser Trp Leu Gly Asn Ile Ile Met Phe
1580 1585 1590 1595

gcc ccc aca ctg tgg gcg agg atg ata ctg atg acc cat ttc ttt agc 17511
Ala Pro Thr Leu Trp Ala Arg Met Ile Leu Met Thr His Phe Phe Ser
1600 1605 1610

gtc ctt ata gcc agg gac cag ctt gaa cag gcc ctc gat tgc gag atc 17559
Val Leu Ile Ala Arg Asp Gln Leu Glu Gln Ala Leu Asp Cys Glu Ile
1615 1620 1625

tac ggg gcc tgc tac tcc ata gaa cca ctg gat cta cct cca atc att 17607
Tyr Gly Ala Cys Tyr Ser Ile Glu Pro Leu Asp Leu Pro Pro Ile Ile
1630 1635 1640

caa aga ctc cat ggc ctc agc gca ttt tca ctc cac agt tac tct cca 17655
Gln Arg Leu His Gly Leu Ser Ala Phe Ser Leu His Ser Tyr Ser Pro
1645 1650 1655

ggt gaa atc aat agg gtg gcc gca tgc ctc aga aaa ctt ggg gta ccg 17703
Gly Glu Ile Asn Arg Val Ala Ala Cys Leu Arg Lys Leu Gly Val Pro
1660 1665 1670 1675

ccc ttg cga gct tgg aga cac cgg gcc cgg agc gtc cgc gct agg ctt 17751
Pro Leu Arg Ala Trp Arg His Arg Ala Arg Ser Val Arg Ala Arg Leu
1680 1685 1690

ctg gcc aga gga ggc agg gct gcc ata tgt ggc aag tac ctc ttc aac 17799
Leu Ala Arg Gly Gly Arg Ala Ala Ile Cys Gly Lys Tyr Leu Phe Asn
1695 1700 1705

tgg gca gta aga aca aag ctc aaa ctc act cca ata gcg gcc gct ggc 17847
Trp Ala Val Arg Thr Lys Leu Lys Leu Thr Pro Ile Ala Ala Ala Gly
1710 1715 1720

cag ctg gac ttg tcc ggc tgg ttc acg gct ggc tac agc ggg gga gac 17895
Gln Leu Asp Leu Ser Gly Trp Phe Thr Ala Gly Tyr Ser Gly Gly Asp
1725 1730 1735

att tat cac agc gtg tct cat gcc cgg ccc cgc tgg atc tgg ttt tgc 17943
Ile Tyr His Ser Val Ser His Ala Arg Pro Arg Trp Ile Trp Phe Cys
1740 1745 1750 1755

cta ctc ctg ctt gct gca ggg gta ggc atc tac ctc ctc ccc aac cga 17991
Leu Leu Leu Leu Ala Ala Gly Val Gly Ile Tyr Leu Leu Pro Asn Arg
1760 1765 1770

tgaatagtcg actttgttcc cactgtactt ttagctcgta caaaatacaa tatacttttc 18051

atttctccgt aaacaacatg ttttcccatg taatatacctt ttctattttt cgttccgtta 18111

ccaactttac acatacttta tatagctatt cacttctata cactaaaaaa ctaagacaat 18171

tttaattttg ctgcctgccca tatctcaatt tggtataaat tcctataatt tatectatta 18231

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 gggttaagaa tactgggcaa tttcatgtt cttcaacact acatatgcgt atatatacca 19671
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<210> 11
 <211> 1771
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:
pd.deltaNS3NS5.pj

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Gly Ile Asp Pro Asn Ile Arg Thr Gly Val Arg Thr Ile Thr Thr Gly
35 40 45
Ser Pro Ile Thr Tyr Ser Thr Tyr Gly Lys Phe Leu Ala Asp Gly Gly
50 55 60
Cys Ser Gly Gly Ala Tyr Asp Ile Ile Ile Cys Asp Glu Cys His Ser
65 70 75 80
Thr Asp Ala Thr Ser Ile Leu Gly Ile Gly Thr Val Leu Asp Gln Ala
85 90 95
Glu Thr Ala Gly Ala Arg Leu Val Val Leu Ala Thr Ala Thr Pro Pro
100 105 110
Gly Ser Val Thr Val Pro His Pro Asn Ile Glu Glu Val Ala Leu Ser
115 120 125
Thr Thr Gly Glu Ile Pro Phe Tyr Gly Lys Ala Ile Pro Leu Glu Val
130 135 140
Ile Lys Gly Gly Arg His Leu Ile Phe Cys His Ser Lys Lys Lys Cys
145 150 155 160
Asp Glu Leu Ala Ala Lys Leu Val Ala Leu Gly Ile Asn Ala Val Ala
165 170 175
Tyr Tyr Arg Gly Leu Asp Val Ser Val Ile Pro Thr Ser Gly Asp Val
180 185 190
Val Val Val Ala Thr Asp Ala Leu Met Thr Gly Tyr Thr Gly Asp Phe
195 200 205
Asp Ser Val Ile Asp Cys Asn Thr Cys Val Thr Gln Thr Val Asp Phe
210 215 220
Ser Leu Asp Pro Thr Phe Thr Ile Glu Thr Ile Thr Leu Pro Gln Asp
225 230 235 240
Ala Val Ser Arg Thr Gln Arg Arg Gly Arg Thr Gly Arg Gly Lys Pro
245 250 255
Gly Ile Tyr Arg Phe Val Ala Pro Gly Glu Arg Pro Ser Gly Met Phe
260 265 270
Asp Ser Ser Val Leu Cys Glu Cys Tyr Asp Ala Gly Cys Ala Trp Tyr

275		280		285
Glu Leu Thr Pro Ala	Glu Thr Thr Val Arg Leu	Arg Ala Tyr Met Asn		
290	295	300		
Thr Pro Gly Leu Pro	Val Cys Gln Asp His Leu	Glu Phe Trp Glu Gly		
305	310	315		320
Val Phe Thr Gly Leu	Thr His Ile Asp Ala	His Phe Leu Ser Gln Thr		
	325	330		335
Lys Gln Ser Gly Glu	Asn Leu Pro Tyr Leu	Val Ala Tyr Gln Ala Thr		
	340	345		350
Val Cys Ala Arg Ala	Gln Ala Pro Pro Pro	Ser Trp Asp Gln Met Trp		
	355	360		365
Lys Cys Leu Ile Arg	Leu Lys Pro Thr Leu	His Gly Pro Thr Pro Leu		
	370	375		380
Leu Tyr Arg Leu Gly	Ala Val Gln Asn Glu	Ile Thr Leu Thr His Pro		
	385	390		395
Val Thr Lys Tyr Ile	Met Thr Cys Met Ser	Ala Asp Leu Glu Val Val		
	405	410		415
Thr Ser Thr Trp Val	Leu Val Gly Gly Val	Leu Ala Ala Leu Ala Ala		
	420	425		430
Tyr Cys Leu Ser Thr	Gly Cys Val Val Ile	Val Gly Arg Val Val Leu		
	435	440		445
Ser Gly Lys Pro Ala	Ile Ile Pro Asp Arg	Glu Val Leu Tyr Arg Glu		
	450	455		460
Phe Asp Glu Met Glu	Glu Cys Ser Gln His	Leu Pro Tyr Ile Glu Gln		
	465	470		475
Gly Met Met Leu Ala	Glu Gln Phe Lys Gln	Lys Ala Leu Gly Leu Leu		
	485	490		495
Gln Thr Ala Ser Arg	Gln Ala Glu Val Ile	Ala Pro Ala Val Gln Thr		
	500	505		510
Asn Trp Gln Lys Leu	Glu Thr Phe Trp Ala	Lys His Met Trp Asn Phe		
	515	520		525
Ile Ser Gly Ile Gln	Tyr Leu Ala Gly Leu	Ser Thr Leu Pro Gly Asn		
	530	535		540
Pro Ala Ile Ala Ser	Leu Met Ala Phe Thr	Ala Ala Val Thr Ser Pro		
	545	550		555
Leu Thr Thr Ser Gln	Thr Leu Leu Phe Asn	Ile Leu Gly Gly Trp Val		
	565	570		575
Ala Ala Gln Leu Ala	Ala Pro Gly Ala Ala	Thr Ala Phe Val Gly Ala		

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580					585					590									
Gly	Leu	Ala	Gly	Ala	Ala	Ile	Gly	Ser	Val	Gly	Leu	Gly	Lys	Val	Leu				
595					600					605									
Ile	Asp	Ile	Leu	Ala	Gly	Tyr	Gly	Ala	Gly	Val	Ala	Gly	Ala	Leu	Val				
610					615					620									
Ala	Phe	Lys	Ile	Met	Ser	Gly	Glu	Val	Pro	Ser	Thr	Glu	Asp	Leu	Val				
625					630					635					640				
Asn	Leu	Leu	Pro	Ala	Ile	Leu	Ser	Pro	Gly	Ala	Leu	Val	Val	Gly	Val				
645					650					655									
Val	Cys	Ala	Ala	Ile	Leu	Arg	Arg	His	Val	Gly	Pro	Gly	Glu	Gly	Ala				
660					665					670									
Val	Gln	Trp	Met	Asn	Arg	Leu	Ile	Ala	Phe	Ala	Ser	Arg	Gly	Asn	His				
675					680					685									
Val	Ser	Pro	Thr	His	Tyr	Val	Pro	Glu	Ser	Asp	Ala	Ala	Ala	Arg	Val				
690					695					700									
Thr	Ala	Ile	Leu	Ser	Ser	Leu	Thr	Val	Thr	Gln	Leu	Leu	Arg	Arg	Leu				
705					710					715					720				
His	Gln	Trp	Ile	Ser	Ser	Glu	Cys	Thr	Thr	Pro	Cys	Ser	Gly	Ser	Trp				
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Leu	Arg	Asp	Ile	Trp	Asp	Trp	Ile	Cys	Glu	Val	Leu	Ser	Asp	Phe	Lys				
740					745					750									
Thr	Trp	Leu	Lys	Ala	Lys	Leu	Met	Pro	Gln	Leu	Pro	Gly	Ile	Pro	Phe				
755					760					765									
Val	Ser	Cys	Gln	Arg	Gly	Tyr	Lys	Gly	Val	Trp	Arg	Gly	Asp	Gly	Ile				
770					775					780									
Met	His	Thr	Arg	Cys	His	Cys	Gly	Ala	Glu	Ile	Thr	Gly	His	Val	Lys				
785					790					795					800				
Asn	Gly	Thr	Met	Arg	Ile	Val	Gly	Pro	Arg	Thr	Cys	Arg	Asn	Met	Trp				
805					810					815									
Ser	Gly	Thr	Phe	Pro	Ile	Asn	Ala	Tyr	Thr	Thr	Gly	Pro	Cys	Thr	Pro				
820					825					830									
Leu	Pro	Ala	Pro	Asn	Tyr	Thr	Phe	Ala	Leu	Trp	Arg	Val	Ser	Ala	Glu				
835					840					845									
Glu	Tyr	Val	Glu	Ile	Arg	Gln	Val	Gly	Asp	Phe	His	Tyr	Val	Thr	Gly				
850					855					860									
Met	Thr	Thr	Asp	Asn	Leu	Lys	Cys	Pro	Cys	Gln	Val	Pro	Ser	Pro	Glu				
865					870					875					880				
Phe	Phe	Thr	Glu	Leu	Asp	Gly	Val	Arg	Leu	His	Arg	Phe	Ala	Pro	Pro				

885	890	895
Cys Lys Pro Leu Leu Arg Glu Glu Val Ser Phe Arg Val Gly Leu His		
900	905	910
Glu Tyr Pro Val Gly Ser Gln Leu Pro Cys Glu Pro Glu Pro Asp Val		
915	920	925
Ala Val Leu Thr Ser Met Leu Thr Asp Pro Ser His Ile Thr Ala Glu		
930	935	940
Ala Ala Gly Arg Arg Leu Ala Arg Gly Ser Pro Pro Ser Val Ala Ser		
945	950	955
Ser Ser Ala Ser Gln Leu Ser Ala Pro Ser Leu Lys Ala Thr Cys Thr		
965	970	975
Ala Asn His Asp Ser Pro Asp Ala Glu Leu Ile Glu Ala Asn Leu Leu		
980	985	990
Trp Arg Gln Glu Met Gly Gly Asn Ile Thr Arg Val Glu Ser Glu Asn		
995	1000	1005
Lys Val Val Ile Leu Asp Ser Phe Asp Pro Leu Val Ala Glu Glu Asp		
1010	1015	1020
Glu Arg Glu Ile Ser Val Pro Ala Glu Ile Leu Arg Lys Ser Arg Arg		
1025	1030	1035
Phe Ala Gln Ala Leu Pro Val Trp Ala Arg Pro Asp Tyr Asn Pro Pro		
1045	1050	1055
Leu Val Glu Thr Trp Lys Lys Pro Asp Tyr Glu Pro Pro Val Val His		
1060	1065	1070
Gly Cys Pro Leu Pro Pro Pro Lys Ser Pro Pro Val Pro Pro Pro Arg		
1075	1080	1085
Lys Lys Arg Thr Val Val Leu Thr Glu Ser Thr Leu Ser Thr Ala Leu		
1090	1095	1100
Ala Glu Leu Ala Thr Arg Ser Phe Gly Ser Ser Ser Thr Ser Gly Ile		
1105	1110	1115
Thr Gly Asp Asn Thr Thr Thr Ser Ser Glu Pro Ala Pro Ser Gly Cys		
1125	1130	1135
Pro Pro Asp Ser Asp Ala Glu Ser Tyr Ser Ser Met Pro Pro Leu Glu		
1140	1145	1150
Gly Glu Pro Gly Asp Pro Asp Leu Ser Asp Gly Ser Trp Ser Thr Val		
1155	1160	1165
Ser Ser Glu Ala Asn Ala Glu Asp Val Val Cys Cys Ser Met Ser Tyr		
1170	1175	1180
Ser Trp Thr Gly Ala Leu Val Thr Pro Cys Ala Ala Glu Glu Gln Lys		

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185	1190	1195	1200
Leu Pro Ile Asn Ala	Leu Ser Asn Ser Leu	Leu Arg His His Asn Leu	
1205	1210	1215	
Val Tyr Ser Thr Thr Ser Arg Ser Ala Cys	Gln Arg Gln Lys Lys Val		
1220	1225	1230	
Thr Phe Asp Arg Leu Gln Val Leu Asp Ser	His Tyr Gln Asp Val Leu		
1235	1240	1245	
Lys Glu Val Lys Ala Ala Ala Ser Lys Val Lys	Ala Asn Leu Leu Ser		
1250	1255	1260	
Val Glu Glu Ala Cys Ser Leu Thr Pro	Pro His Ser Ala Lys Ser Lys		
265	1270	1275	1280
Phe Gly Tyr Gly Ala Lys Asp Val Arg	Cys His Ala Arg Lys Ala Val		
1285	1290	1295	
Thr His Ile Asn Ser Val Trp Lys Asp	Leu Leu Glu Asp Asn Val Thr		
1300	1305	1310	
Pro Ile Asp Thr Thr Ile Met Ala Lys Asn Glu Val Phe Cys Val Gln			
1315	1320	1325	
Pro Glu Lys Gly Gly Arg Lys Pro Ala Arg Leu Ile Val Phe Pro Asp			
1330	1335	1340	
Leu Gly Val Arg Val Cys Glu Lys Met Ala Leu Tyr Asp Val Val Thr			
345	1350	1355	1360
Lys Leu Pro Leu Ala Val Met Gly Ser Ser Tyr Gly Phe Gln Tyr Ser			
1365	1370	1375	
Pro Gly Gln Arg Val Glu Phe Leu Val Gln Ala Trp Lys Ser Lys Lys			
1380	1385	1390	
Thr Pro Met Gly Phe Ser Tyr Asp Thr Arg Cys Phe Asp Ser Thr Val			
1395	1400	1405	
Thr Glu Ser Asp Ile Arg Thr Glu Glu Ala Ile Tyr Gln Cys Cys Asp			
1410	1415	1420	
Leu Asp Pro Gln Ala Arg Val Ala Ile Lys Ser Leu Thr Glu Arg Leu			
425	1430	1435	1440
Tyr Val Gly Gly Pro Leu Thr Asn Ser Arg Gly Glu Asn Cys Gly Tyr			
1445	1450	1455	
Arg Arg Cys Arg Ala Ser Gly Val Leu Thr Thr Ser Cys Gly Asn Thr			
1460	1465	1470	
Leu Thr Cys Tyr Ile Lys Ala Arg Ala Ala Cys Arg Ala Ala Gly Leu			
1475	1480	1485	
Gln Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val Val Ile Cys			

1490	1495	1500
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Glu Ala Met Thr Arg Tyr Ser Ala Pro Pro	Gly Asp Pro Pro Gln Pro	
	1525 1530 1535	
Glu Tyr Asp Leu Glu Leu Ile Thr Ser Cys Ser Ser Asn Val Ser Val		
	1540 1545 1550	
Ala His Asp Gly Ala Gly Lys Arg Val Tyr Tyr Leu Thr Arg Asp Pro		
	1555 1560 1565	
Thr Thr Pro Leu Ala Arg Ala Ala Trp Glu Thr Ala Arg His Thr Pro		
	1570 1575 1580	
Val Asn Ser Trp Leu Gly Asn Ile Ile Met Phe Ala Pro Thr Leu Trp		
585	1590 1595	1600
Ala Arg Met Ile Leu Met Thr His Phe Phe Ser Val Leu Ile Ala Arg		
	1605 1610 1615	
Asp Gln Leu Glu Gln Ala Leu Asp Cys Glu Ile Tyr Gly Ala Cys Tyr		
	1620 1625 1630	
Ser Ile Glu Pro Leu Asp Leu Pro Pro Ile Ile Gln Arg Leu His Gly		
	1635 1640 1645	
Leu Ser Ala Phe Ser Leu His Ser Tyr Ser Pro Gly Glu Ile Asn Arg		
	1650 1655 1660	
Val Ala Ala Cys Leu Arg Lys Leu Gly Val Pro Pro Leu Arg Ala Trp		
665	1670 1675	1680
Arg His Arg Ala Arg Ser Val Arg Ala Arg Leu Leu Ala Arg Gly Gly		
	1685 1690 1695	
Arg Ala Ala Ile Cys Gly Lys Tyr Leu Phe Asn Trp Ala Val Arg Thr		
	1700 1705 1710	
Lys Leu Lys Leu Thr Pro Ile Ala Ala Ala Gly Gln Leu Asp Leu Ser		
	1715 1720 1725	
Gly Trp Phe Thr Ala Gly Tyr Ser Gly Gly Asp Ile Tyr His Ser Val		
	1730 1735 1740	
Ser His Ala Arg Pro Arg Trp Ile Trp Phe Cys Leu Leu Leu Leu Ala		
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<213> Artificial Sequence

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<223> Description of Artificial Sequence:
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<221> CDS

<222> (12679)..(18354)

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cggatcaacg ttcttaatat cgctgaatct tccacaattg atgaaagtag ctaggaagag 180
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 ctataataat aggaagattg cccgagaaag acaagaagag agctaccgaa atgctcatga 1560
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 aaaaaaggag agtagcaacg agggtaaggg gcagaaaatc acgtaatact tctaggggat 1980
 gatccaatat caaaggaaat gatagcattg aaggatgaga ctaatccaat tgaggagtgg 2040
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cct	gct	gtc	cag	acc	aac	tgg	caa	aaa	ctc	gag	acc	ttc	tgg	gcg	aag	14247														
Pro	Ala	Val	Gln	Thr	Asn	Trp	Gln	Lys	Leu	Glu	Thr	Phe	Trp	Ala	Lys															
510					515					520																				
cat	atg	tgg	aac	ttc	atc	agt	ggg	ata	caa	tac	ttg	gcg	ggc	ttg	tca	14295														
His	Met	Trp	Asn	Phe	Ile	Ser	Gly	Ile	Gln	Tyr	Leu	Ala	Gly	Leu	Ser															
525					530					535																				
acg	ctg	cct	ggt	aac	ccc	gcc	att	gct	tca	ttg	atg	gct	ttt	aca	gct	14343														
Thr	Leu	Pro	Gly	Asn	Pro	Ala	Ile	Ala	Ser	Leu	Met	Ala	Phe	Thr	Ala															
540					545					550					555															
gct	gtc	acc	agc	cca	cta	acc	act	agc	caa	acc	ctc	ctc	ttc	aac	ata	14391														
Ala	Val	Thr	Ser	Pro	Leu	Thr	Thr	Ser	Gln	Thr	Leu	Leu	Phe	Asn	Ile															
560					565					570																				

ttg ggg ggg tgg gtg gct gcc cag ctc gcc gcc ccc ggt gcc gct act	14439
Leu Gly Gly Trp Val Ala Ala Gln Leu Ala Ala Pro Gly Ala Ala Thr	
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gcc ttt gtg ggc gct ggc tta gct ggc gcc gcc atc ggc agt gtt gga	14487
Ala Phe Val Gly Ala Gly Leu Ala Gly Ala Ala Ile Gly Ser Val Gly	
590 595 600	
ctg ggg aag gtc ctc ata gac atc ctt gca ggg tat ggc gcg ggc gtg	14535
Leu Gly Lys Val Leu Ile Asp Ile Leu Ala Gly Tyr Gly Ala Gly Val	
605 610 615	
gcg gga gct ctt gtg gca ttc aag atc atg agc ggt gag gtc ccc tcc	14583
Ala Gly Ala Leu Val Ala Phe Lys Ile Met Ser Gly Glu Val Pro Ser	
620 625 630 635	
acg gag gac ctg gtc aat cta ctg ccc gcc atc ctc tcg ccc gga gcc	14631
Thr Glu Asp Leu Val Asn Leu Leu Pro Ala Ile Leu Ser Pro Gly Ala	
640 645 650	
ctc gta gtc ggc gtg gtc tgt gca gca ata ctg cgc cgg cac gtt ggc	14679
Leu Val Val Gly Val Val Cys Ala Ala Ile Leu Arg Arg His Val Gly	
655 660 665	
ccg ggc gag ggg gca gtg cag tgg atg aac cgg ctg ata gcc ttc gcc	14727
Pro Gly Glu Gly Ala Val Gln Trp Met Asn Arg Leu Ile Ala Phe Ala	
670 675 680	
tcc cgg ggg aac cat gtt tcc ccc acg cac tac gtg ccg gag agc gat	14775
Ser Arg Gly Asn His Val Ser Pro Thr His Tyr Val Pro Glu Ser Asp	
685 690 695	
gca gct gcc cgc gtc act gcc ata ctc agc agc ctc act gta acc cag	14823
Ala Ala Ala Arg Val Thr Ala Ile Leu Ser Ser Leu Thr Val Thr Gln	
700 705 710 715	
ctc ctg agg cga ctg cac cag tgg ata agc tcg gag tgt acc act cca	14871
Leu Leu Arg Arg Leu His Gln Trp Ile Ser Ser Glu Cys Thr Thr Pro	
720 725 730	
tgc tcc ggt tcc tgg cta agg gac atc tgg gac tgg ata tgc gag gtg	14919
Cys Ser Gly Ser Trp Leu Arg Asp Ile Trp Asp Trp Ile Cys Glu Val	
735 740 745	
ttg agc gac ttt aag acc tgg cta aaa gct aag ctc atg cca cag ctg	14967
Leu Ser Asp Phe Lys Thr Trp Leu Lys Ala Lys Leu Met Pro Gln Leu	
750 755 760	
cct ggg atc ccc ttt gtg tcc tgc cag cgc ggg tat aag ggg gtc tgg	15015
Pro Gly Ile Pro Phe Val Ser Cys Gln Arg Gly Tyr Lys Gly Val Trp	
765 770 775	
cga ggg gac ggc atc atg cac act cgc tgc cac tgt gga gct gag atc	15063
Arg Gly Asp Gly Ile Met His Thr Arg Cys His Cys Gly Ala Glu Ile	
780 785 790 795	
act gga cat gtc aaa aac ggg acg atg agg atc gtc ggt cct agg acc	15111

Thr	Gly	His	Val	Lys	Asn	Gly	Thr	Met	Arg	Ile	Val	Gly	Pro	Arg	Thr		
				800					805					810			
tgc	agg	aac	atg	tgg	agt	ggg	acc	ttc	ccc	att	aat	gcc	tac	acc	acg	15159	
Cys	Arg	Asn	Met	Trp	Ser	Gly	Thr	Phe	Pro	Ile	Asn	Ala	Tyr	Thr	Thr		
				815					820					825			
ggc	ccc	tgt	acc	ccc	ctt	cct	gcg	ccg	aac	tac	acg	ttc	gcg	cta	tgg	15207	
Gly	Pro	Cys	Thr	Pro	Leu	Pro	Ala	Pro	Asn	Tyr	Thr	Phe	Ala	Leu	Trp		
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agg	gtg	tct	gca	gag	gaa	tac	gtg	gag	ata	agg	cag	gtg	ggg	gac	ttc	15255	
Arg	Val	Ser	Ala	Glu	Glu	Tyr	Val	Glu	Ile	Arg	Gln	Val	Gly	Asp	Phe		
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cac	tac	gtg	acg	ggc	atg	act	act	gac	aac	ctt	aaa	tgc	ccg	tgc	cag	15303	
His	Tyr	Val	Thr	Gly	Met	Thr	Thr	Asp	Asn	Leu	Lys	Cys	Pro	Cys	Gln		
				860					865					870			875
gtc	cca	tcg	ccc	gaa	ttt	ttc	aca	gaa	ttg	gac	ggg	gtg	ggc	cta	cat	15351	
Val	Pro	Ser	Pro	Glu	Phe	Phe	Thr	Glu	Leu	Asp	Gly	Val	Arg	Leu	His		
				880					885					890			
agg	ttt	gcg	ccc	ccc	tgc	aag	ccc	ttg	ctg	cgg	gag	gag	gta	tca	ttc	15399	
Arg	Phe	Ala	Pro	Pro	Cys	Lys	Pro	Leu	Leu	Arg	Glu	Glu	Val	Ser	Phe		
				895					900					905			
aga	gta	gga	ctc	cac	gaa	tac	ccg	gta	ggg	tcg	caa	tta	cct	tgc	gag	15447	
Arg	Val	Gly	Leu	His	Glu	Tyr	Pro	Val	Gly	Ser	Gln	Leu	Pro	Cys	Glu		
				910					915					920			
ccc	gaa	ccg	gac	gtg	gcc	gtg	ttg	acg	tcc	atg	ctc	act	gat	ccc	tcc	15495	
Pro	Glu	Pro	Asp	Val	Ala	Val	Leu	Thr	Ser	Met	Leu	Thr	Asp	Pro	Ser		
				925					930					935			
cat	ata	aca	gca	gag	gcg	gcc	ggg	cga	agg	ttg	gcg	agg	gga	tca	ccc	15543	
His	Ile	Thr	Ala	Glu	Ala	Ala	Gly	Arg	Arg	Leu	Ala	Arg	Gly	Ser	Pro		
				940					945					950			955
ccc	tct	gtg	gcc	agc	tcc	tcg	gct	agc	cag	cta	tcc	gct	cca	tct	ctc	15591	
Pro	Ser	Val	Ala	Ser	Ser	Ser	Ala	Ser	Gln	Leu	Ser	Ala	Pro	Ser	Leu		
				960					965					970			
aag	gca	act	tgc	acc	gct	aac	cat	gac	tcc	cct	gat	gct	gag	ctc	ata	15639	
Lys	Ala	Thr	Cys	Thr	Ala	Asn	His	Asp	Ser	Pro	Asp	Ala	Glu	Leu	Ile		
				975					980					985			
gag	gcc	aac	ctc	cta	tgg	agg	cag	gag	atg	ggc	ggc	aac	atc	acc	agg	15687	
Glu	Ala	Asn	Leu	Leu	Trp	Arg	Gln	Glu	Met	Gly	Gly	Asn	Ile	Thr	Arg		
				990					995					1000			
gtt	gag	tca	gaa	aac	aaa	gtg	gtg	att	ctg	gac	tcc	ttc	gat	ccg	ctt	15735	
Val	Glu	Ser	Glu	Asn	Lys	Val	Val	Ile	Leu	Asp	Ser	Phe	Asp	Pro	Leu		
				1005					1010					1015			
gtg	gcg	gag	gag	gac	gag	cgg	gag	atc	tcc	gta	ccc	gca	gaa	atc	ctg	15783	
Val	Ala	Glu	Glu	Asp	Glu	Arg	Glu	Ile	Ser	Val	Pro</						

1020	1025	1030	1035	
cgg aag tct	cgg aga ttc gcc cag gcc ctg	ccc gtt tgg gcg cgg ccg		15831
Arg Lys Ser	Arg Arg Phe Ala Gln Ala Leu Pro	Val Trp Ala Arg Pro		
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gac tat aac	ccc ccg cta gtg gag acg tgg aaa aag	ccc gac tac gaa		15879
Asp Tyr Asn	Pro Pro Leu Val Glu Thr Trp Lys Lys	Pro Asp Tyr Glu		
	1055	1060	1065	
cca cct gtg	gtc cat ggc tgc ccg ctt cca cct cca aag	tcc cct cct		15927
Pro Pro Val	Val His Gly Cys Pro Leu Pro Pro Pro	Lys Ser Pro Pro		
	1070	1075	1080	
gtg cct ccg	cct ccg aag aag ccg acg gtg gtc ctc	act gaa tca acc		15975
Val Pro Pro	Pro Arg Lys Lys Arg Thr Val Val Leu Thr	Glu Ser Thr		
	1085	1090	1095	
cta tct act	gcc ttg gcc gag ctc gcc acc aga agc	ttt ggc agc tcc		16023
Leu Ser Thr	Ala Leu Ala Glu Leu Ala Thr Arg Ser	Phe Gly Ser Ser		
	1100	1105	1110	1115
tca act tcc	ggc att acg ggc gac aat acg aca aca	tcc tct gag ccc		16071
Ser Thr Ser	Gly Ile Thr Gly Asp Asn Thr Thr Thr	Ser Ser Glu Pro		
	1120	1125	1130	
gcc cct tct	ggc tgc ccc ccc gac tcc gac gct gag	tcc tat tcc tcc		16119
Ala Pro Ser	Gly Cys Pro Pro Asp Ser Asp Ala Glu	Ser Tyr Ser Ser		
	1135	1140	1145	
atg ccc ccc	ctg gag ggg gag cct ggg gat ccg gat	ctt agc gac ggg		16167
Met Pro Pro	Leu Glu Gly Glu Pro Gly Asp Pro Asp	Leu Ser Asp Gly		
	1150	1155	1160	
tca tgg tca	acg gtc agt agt gag gcc aac ggc gag	gat gtc gtg tgc		16215
Ser Trp Ser	Thr Val Ser Ser Glu Ala Asn Ala Glu	Asp Val Val Cys		
	1165	1170	1175	
tgc tca atg	tct tac tct tgg aca ggc gca ctc gtc	acc ccg tgc gcc		16263
Cys Ser Met	Ser Tyr Ser Trp Thr Gly Ala Leu Val	Thr Pro Cys Ala		
	1180	1185	1190	1195
gcg gaa gaa	cag aaa ctg ccc atc aat gca cta agc	aac tcg ttg cta		16311
Ala Glu Glu	Gln Lys Leu Pro Ile Asn Ala Leu Ser	Asn Ser Leu Leu		
	1200	1205	1210	
cgt cac cac	aat ttg gtg tat tcc acc acc tca cgc	agt gct tgc caa		16359
Arg His His	Asn Leu Val Tyr Ser Thr Thr Ser Arg	Ser Ala Cys Gln		
	1215	1220	1225	
agg cag aag	aaa gtc aca ttt gac aga ctg caa gtt	ctg gac agc cat		16407
Arg Gln Lys	Lys Val Thr Phe Asp Arg Leu Gln Val	Leu Asp Ser His		
	1230	1235	1240	
tac cag gac	gta ctc aag gag gtt aaa gca gcg gcg	tca aaa gtg aag		16455
Tyr Gln Asp	Val Leu Lys Glu Val Lys Ala Ala Ser	Lys Val Lys		
	1245	1250	1255	

Arg Ala Ala Gly Leu Gln Asp Cys Thr Met Leu Val Cys Gly Asp Asp	
1485	1490 1495
tta gtc gtt atc tgt gaa agc gcg ggg gtc cag gag gac gcg gcg agc	17223
Leu Val Val Ile Cys Glu Ser Ala Gly Val Gln Glu Asp Ala Ala Ser	
1500	1505 1510 1515
ctg aga gcc ttc acg gag gct atg acc agg tac tcc gcc ccc cct ggg	17271
Leu Arg Ala Phe Thr Glu Ala Met Thr Arg Tyr Ser Ala Pro Pro Gly	
	1520 1525 1530
gac ccc cca caa cca gaa tac gac ttg gag ctc ata aca tca tgc tcc	17319
Asp Pro Pro Gln Pro Glu Tyr Asp Leu Glu Leu Ile Thr Ser Cys Ser	
	1535 1540 1545
tcc aac gtg tca gtc gcc cac gac ggc gct gga aag agg gtc tac tac	17367
Ser Asn Val Ser Val Ala His Asp Gly Ala Gly Lys Arg Val Tyr Tyr	
	1550 1555 1560
ctc acc cgt gac cct aca acc ccc ctc gcg aga gct gcg tgg gag aca	17415
Leu Thr Arg Asp Pro Thr Thr Pro Leu Ala Arg Ala Ala Trp Glu Thr	
	1565 1570 1575
gca aga cac act cca gtc aat tcc tgg cta ggc aac ata atc atg ttt	17463
Ala Arg His Thr Pro Val Asn Ser Trp Leu Gly Asn Ile Ile Met Phe	
	1580 1585 1590 1595
gcc ccc aca ctg tgg gcg agg atg ata ctg atg acc cat ttc ttt agc	17511
Ala Pro Thr Leu Trp Ala Arg Met Ile Leu Met Thr His Phe Phe Ser	
	1600 1605 1610
gtc ctt ata gcc agg gac cag ctt gaa cag gcc ctc gat tgc gag atc	17559
Val Leu Ile Ala Arg Asp Gln Leu Glu Gln Ala Leu Asp Cys Glu Ile	
	1615 1620 1625
tac ggg gcc tgc tac tcc ata gaa cca ctg gat cta cct cca atc att	17607
Tyr Gly Ala Cys Tyr Ser Ile Glu Pro Leu Asp Leu Pro Pro Ile Ile	
	1630 1635 1640
caa aga ctc cat ggc ctc agc gca ttt tca ctc cac agt tac tct cca	17655
Gln Arg Leu His Gly Leu Ser Ala Phe Ser Leu His Ser Tyr Ser Pro	
	1645 1650 1655
ggg gaa atc aat agg gtg gcc gca tgc ctc aga aaa ctt ggg gta ccg	17703
Gly Glu Ile Asn Arg Val Ala Ala Cys Leu Arg Lys Leu Gly Val Pro	
	1660 1665 1670 1675
ccc ttg cga gct tgg aga cac cgg gcc cgg agc gtc cgc gct agg ctt	17751
Pro Leu Arg Ala Trp Arg His Arg Ala Arg Ser Val Arg Ala Arg Leu	
	1680 1685 1690
ctg gcc aga gga ggc agg gct gcc ata tgt ggc aag tac ctc ttc aac	17799
Leu Ala Arg Gly Gly Arg Ala Ala Ile Cys Gly Lys Tyr Leu Phe Asn	
	1695 1700 1705
tgg gca gta aga aca aag ctc aaa ctc act cca ata gcg gcc gct ggc	17847
Trp Ala Val Arg Thr Lys Leu Lys Leu Thr Pro Ile Ala Ala Ala Gly	

1710	1715	1720	
cag ctg gac ttg tcc ggc tgg ttc acg gct ggc tac agc ggg gga gac			17895
Gln Leu Asp Leu Ser Gly Trp Phe Thr Ala Gly Tyr Ser Gly Gly Asp			
1725	1730	1735	
att tat cac agc gtg tct cat gcc cgg ccc cgc tgg atc tgg ttt tgc			17943
Ile Tyr His Ser Val Ser His Ala Arg Pro Arg Trp Ile Trp Phe Cys			
1740	1745	1750	1755
cta ctc ctg ctt gct gca ggg gta ggc atc tac ctc ctc ccc aac cga			17991
Leu Leu Leu Leu Ala Ala Gly Val Gly Ile Tyr Leu Leu Pro Asn Arg			
	1760	1765	1770
atg agc acg aat cct aaa cct caa aga aag acc aaa cgt aac acc aac			18039
Met Ser Thr Asn Pro Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn			
	1775	1780	1785
cgg cgg ccg cag gac gtc aag ttc ccg ggt ggc ggt cag atc gtt ggt			18087
Arg Arg Pro Gln Asp Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly			
	1790	1795	1800
gga gtt tac ttg ttg ccg cgc agg ggc cct aga ttg ggt gtg cgc gcg			18135
Gly Val Tyr Leu Leu Pro Arg Arg Gly Pro Arg Leu Gly Val Arg Ala			
	1805	1810	1815
acg aga aag act tcc gag cgg tcg caa cct cga ggt aga cgt cag cct			18183
Thr Arg Lys Thr Ser Glu Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro			
1820	1825	1830	1835
atc ccc aag gct cgt cgg ccc gag ggc agg acc tgg gct cag ccc ggg			18231
Ile Pro Lys Ala Arg Arg Pro Glu Gly Arg Thr Trp Ala Gln Pro Gly			
	1840	1845	1850
tac cct tgg ccc ctc tat ggc aat gag ggc tgc ggg tgg gcg gga tgg			18279
Tyr Pro Trp Pro Leu Tyr Gly Asn Glu Gly Cys Gly Trp Ala Gly Trp			
	1855	1860	1865
ctc ctg tct ccc cgt ggc tct cgg cct agc tgg ggc ccc aca gac ccc			18327
Leu Leu Ser Pro Arg Gly Ser Arg Pro Ser Trp Gly Pro Thr Asp Pro			
	1870	1875	1880
cgg cgt agg tcg cgc aat ttg ggt aag taatagtcga ctttgttccc			18374
Arg Arg Arg Ser Arg Asn Leu Gly Lys			
	1885	1890	
actgtacttt tagctcgtac aaaatacaat atacttttca tttctccgta aacaacatgt			18434
tttcccatgt aatatccttt tctatttttc gttccgttac caactttaca catactttat			18494
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atttcaattt gttataaatt cctataattt atcctattag tagctaaaaa aagatgaatg			18614
tgaatcgaat cctaagagaa ttggatctga tccacaggac ggggtgtggtc gccatgatcg			18674
cgtagtcgat agtgggtcca agtagcgaag cgagcaggac tgggcggcgg ccaaagcggg			18734

<400> 13

Met Ala Ala Tyr Ala Ala Gln Gly Tyr Lys Val Leu Val Leu Asn Pro
1 5 10 15

Ser Val Ala Ala Thr Leu Gly Phe Gly Ala Tyr Met Ser Lys Ala His
20 25 30

Gly Ile Asp Pro Asn Ile Arg Thr Gly Val Arg Thr Ile Thr Thr Gly
35 40 45

Ser Pro Ile Thr Tyr Ser Thr Tyr Gly Lys Phe Leu Ala Asp Gly Gly
50 55 60

Cys Ser Gly Gly Ala Tyr Asp Ile Ile Ile Cys Asp Glu Cys His Ser
65 70 75 80

Thr Asp Ala Thr Ser Ile Leu Gly Ile Gly Thr Val Leu Asp Gln Ala
85 90 95

Glu Thr Ala Gly Ala Arg Leu Val Val Leu Ala Thr Ala Thr Pro Pro
100 105 110

Gly Ser Val Thr Val Pro His Pro Asn Ile Glu Glu Val Ala Leu Ser
115 120 125

Thr Thr Gly Glu Ile Pro Phe Tyr Gly Lys Ala Ile Pro Leu Glu Val
130 135 140

Ile Lys Gly Gly Arg His Leu Ile Phe Cys His Ser Lys Lys Lys Cys
145 150 155 160

Asp Glu Leu Ala Ala Lys Leu Val Ala Leu Gly Ile Asn Ala Val Ala
165 170 175

Tyr Tyr Arg Gly Leu Asp Val Ser Val Ile Pro Thr Ser Gly Asp Val
180 185 190

Val Val Val Ala Thr Asp Ala Leu Met Thr Gly Tyr Thr Gly Asp Phe
195 200 205

Asp Ser Val Ile Asp Cys Asn Thr Cys Val Thr Gln Thr Val Asp Phe
210 215 220

Ser Leu Asp Pro Thr Phe Thr Ile Glu Thr Ile Thr Leu Pro Gln Asp
225 230 235 240

Ala Val Ser Arg Thr Gln Arg Arg Gly Arg Thr Gly Arg Gly Lys Pro
245 250 255

Gly Ile Tyr Arg Phe Val Ala Pro Gly Glu Arg Pro Ser Gly Met Phe
260 265 270

Asp Ser Ser Val Leu Cys Glu Cys Tyr Asp Ala Gly Cys Ala Trp Tyr
275 280 285

Glu Leu Thr Pro Ala Glu Thr Thr Val Arg Leu Arg Ala Tyr Met Asn
290 295 300

Thr	Pro	Gly	Leu	Pro	Val	Cys	Gln	Asp	His	Leu	Glu	Phe	Trp	Glu	Gly	305	310	315	320
Val	Phe	Thr	Gly	Leu	Thr	His	Ile	Asp	Ala	His	Phe	Leu	Ser	Gln	Thr	325	330	335	
Lys	Gln	Ser	Gly	Glu	Asn	Leu	Pro	Tyr	Leu	Val	Ala	Tyr	Gln	Ala	Thr	340	345	350	
Val	Cys	Ala	Arg	Ala	Gln	Ala	Pro	Pro	Pro	Ser	Trp	Asp	Gln	Met	Trp	355	360	365	
Lys	Cys	Leu	Ile	Arg	Leu	Lys	Pro	Thr	Leu	His	Gly	Pro	Thr	Pro	Leu	370	375	380	
Leu	Tyr	Arg	Leu	Gly	Ala	Val	Gln	Asn	Glu	Ile	Thr	Leu	Thr	His	Pro	385	390	395	400
Val	Thr	Lys	Tyr	Ile	Met	Thr	Cys	Met	Ser	Ala	Asp	Leu	Glu	Val	Val	405	410	415	
Thr	Ser	Thr	Trp	Val	Leu	Val	Gly	Gly	Val	Leu	Ala	Ala	Leu	Ala	Ala	420	425	430	
Tyr	Cys	Leu	Ser	Thr	Gly	Cys	Val	Val	Ile	Val	Gly	Arg	Val	Val	Leu	435	440	445	
Ser	Gly	Lys	Pro	Ala	Ile	Ile	Pro	Asp	Arg	Glu	Val	Leu	Tyr	Arg	Glu	450	455	460	
Phe	Asp	Glu	Met	Glu	Glu	Cys	Ser	Gln	His	Leu	Pro	Tyr	Ile	Glu	Gln	465	470	475	480
Gly	Met	Met	Leu	Ala	Glu	Gln	Phe	Lys	Gln	Lys	Ala	Leu	Gly	Leu	Leu	485	490	495	
Gln	Thr	Ala	Ser	Arg	Gln	Ala	Glu	Val	Ile	Ala	Pro	Ala	Val	Gln	Thr	500	505	510	
Asn	Trp	Gln	Lys	Leu	Glu	Thr	Phe	Trp	Ala	Lys	His	Met	Trp	Asn	Phe	515	520	525	
Ile	Ser	Gly	Ile	Gln	Tyr	Leu	Ala	Gly	Leu	Ser	Thr	Leu	Pro	Gly	Asn	530	535	540	
Pro	Ala	Ile	Ala	Ser	Leu	Met	Ala	Phe	Thr	Ala	Ala	Val	Thr	Ser	Pro	545	550	555	560
Leu	Thr	Thr	Ser	Gln	Thr	Leu	Leu	Phe	Asn	Ile	Leu	Gly	Gly	Trp	Val	565	570	575	
Ala	Ala	Gln	Leu	Ala	Ala	Pro	Gly	Ala	Ala	Thr	Ala	Phe	Val	Gly	Ala	580	585	590	
Gly	Leu	Ala	Gly	Ala	Ala	Ile	Gly	Ser	Val	Gly	Leu	Gly	Lys	Val	Leu	595	600	605	

Ile	Asp	Ile	Leu	Ala	Gly	Tyr	Gly	Ala	Gly	Val	Ala	Gly	Ala	Leu	Val
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Ala	Phe	Lys	Ile	Met	Ser	Gly	Glu	Val	Pro	Ser	Thr	Glu	Asp	Leu	Val
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Asn	Leu	Leu	Pro	Ala	Ile	Leu	Ser	Pro	Gly	Ala	Leu	Val	Val	Gly	Val
			645						650					655	
Val	Cys	Ala	Ala	Ile	Leu	Arg	Arg	His	Val	Gly	Pro	Gly	Glu	Gly	Ala
		660						665					670		
Val	Gln	Trp	Met	Asn	Arg	Leu	Ile	Ala	Phe	Ala	Ser	Arg	Gly	Asn	His
		675					680					685			
Val	Ser	Pro	Thr	His	Tyr	Val	Pro	Glu	Ser	Asp	Ala	Ala	Ala	Arg	Val
	690					695					700				
Thr	Ala	Ile	Leu	Ser	Ser	Leu	Thr	Val	Thr	Gln	Leu	Leu	Arg	Arg	Leu
705					710					715					720
His	Gln	Trp	Ile	Ser	Ser	Glu	Cys	Thr	Thr	Pro	Cys	Ser	Gly	Ser	Trp
			725						730					735	
Leu	Arg	Asp	Ile	Trp	Asp	Trp	Ile	Cys	Glu	Val	Leu	Ser	Asp	Phe	Lys
		740						745					750		
Thr	Trp	Leu	Lys	Ala	Lys	Leu	Met	Pro	Gln	Leu	Pro	Gly	Ile	Pro	Phe
	755					760						765			
Val	Ser	Cys	Gln	Arg	Gly	Tyr	Lys	Gly	Val	Trp	Arg	Gly	Asp	Gly	Ile
	770					775					780				
Met	His	Thr	Arg	Cys	His	Cys	Gly	Ala	Glu	Ile	Thr	Gly	His	Val	Lys
785				790						795					800
Asn	Gly	Thr	Met	Arg	Ile	Val	Gly	Pro	Arg	Thr	Cys	Arg	Asn	Met	Trp
			805						810					815	
Ser	Gly	Thr	Phe	Pro	Ile	Asn	Ala	Tyr	Thr	Thr	Gly	Pro	Cys	Thr	Pro
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Leu	Pro	Ala	Pro	Asn	Tyr	Thr	Phe	Ala	Leu	Trp	Arg	Val	Ser	Ala	Glu
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Glu	Tyr	Val	Glu	Ile	Arg	Gln	Val	Gly	Asp	Phe	His	Tyr	Val	Thr	Gly
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acaagcttac aaaacaaa atg gct gca tat gca gct cag ggc tat aag gtg 12711
Met Ala Ala Tyr Ala Ala Gln Gly Tyr Lys Val
1 5 10
cta gta ctc aac ccc tct gtt gct gca aca ctg ggc ttt ggt gct tac 12759
Leu Val Leu Asn Pro Ser Val Ala Ala Thr Leu Gly Phe Gly Ala Tyr
15 20 25
atg tcc aag gct cat ggg atc gat cct aac atc agg acc ggg gtg aga 12807
Met Ser Lys Ala His Gly Ile Asp Pro Asn Ile Arg Thr Gly Val Arg
30 35 40

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Thr Ile Thr Thr Gly Ser Pro Ile Thr Tyr Ser Thr Tyr Gly Lys Phe	
45 50 55	
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Leu Ala Asp Gly Gly Cys Ser Gly Gly Ala Tyr Asp Ile Ile Ile Cys	
60 65 70 75	
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Asp Glu Cys His Ser Thr Asp Ala Thr Ser Ile Leu Gly Ile Gly Thr	
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Val Leu Asp Gln Ala Glu Thr Ala Gly Ala Arg Leu Val Val Leu Ala	
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Thr Ala Thr Pro Pro Gly Ser Val Thr Val Pro His Pro Asn Ile Glu	
110 115 120	
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Glu Val Ala Leu Ser Thr Thr Gly Glu Ile Pro Phe Tyr Gly Lys Ala	
125 130 135	
atc ccc ctc gaa gta atc aag ggg ggg aga cat ctc atc ttc tgt cat	13143
Ile Pro Leu Glu Val Ile Lys Gly Gly Arg His Leu Ile Phe Cys His	
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Ser Lys Lys Lys Cys Asp Glu Leu Ala Ala Lys Leu Val Ala Leu Gly	
160 165 170	
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Ile Asn Ala Val Ala Tyr Tyr Arg Gly Leu Asp Val Ser Val Ile Pro	
175 180 185	
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Thr Ser Gly Asp Val Val Val Val Ala Thr Asp Ala Leu Met Thr Gly	
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Tyr Thr Gly Asp Phe Asp Ser Val Ile Asp Cys Asn Thr Cys Val Thr	
205 210 215	
cag aca gtc gat ttc agc ctt gac cct acc ttc acc att gag aca atc	13383
Gln Thr Val Asp Phe Ser Leu Asp Pro Thr Phe Thr Ile Glu Thr Ile	
220 225 230 235	
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Thr Leu Pro Gln Asp Ala Val Ser Arg Thr Gln Arg Arg Gly Arg Thr	
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Gly Arg Gly Lys Pro Gly Ile Tyr Arg Phe Val Ala Pro Gly Glu Arg	
255 260 265	
ccc tcc ggc atg ttc gac tgc tcc gtc ctc tgt gag tgc tat gac gca	13527

Pro	Ser	Gly	Met	Phe	Asp	Ser	Ser	Val	Leu	Cys	Glu	Cys	Tyr	Asp	Ala		
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ggc	tgt	gct	tgg	tat	gag	ctc	acg	ccc	gcc	gag	act	aca	gtt	agg	cta	13575	
Gly	Cys	Ala	Trp	Tyr	Glu	Leu	Thr	Pro	Ala	Glu	Thr	Thr	Val	Arg	Leu		
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cga	gcg	tac	atg	aac	acc	ccg	ggg	ctt	ccc	gtg	tgc	cag	gac	cat	ctt	13623	
Arg	Ala	Tyr	Met	Asn	Thr	Pro	Gly	Leu	Pro	Val	Cys	Gln	Asp	His	Leu		
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gaa	ttt	tgg	gag	ggc	gtc	ttt	aca	ggc	ctc	act	cat	ata	gat	gcc	cac	13671	
Glu	Phe	Trp	Glu	Gly	Val	Phe	Thr	Gly	Leu	Thr	His	Ile	Asp	Ala	His		
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ttt	cta	tcc	cag	aca	aag	cag	agt	ggg	gag	aac	ctt	cct	tac	ctg	gta	13719	
Phe	Leu	Ser	Gln	Thr	Lys	Gln	Ser	Gly	Glu	Asn	Leu	Pro	Tyr	Leu	Val		
			335					340					345				
gcg	tac	caa	gcc	acc	gtg	tgc	gct	agg	gct	caa	gcc	cct	ccc	cca	tcg	13767	
Ala	Tyr	Gln	Ala	Thr	Val	Cys	Ala	Arg	Ala	Gln	Ala	Pro	Pro	Pro	Ser		
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tgg	gac	cag	atg	tgg	aag	tgt	ttg	att	cgc	ctc	aag	ccc	acc	ctc	cat	13815	
Trp	Asp	Gln	Met	Trp	Lys	Cys	Leu	Ile	Arg	Leu	Lys	Pro	Thr	Leu	His		
		365				370					375						
ggg	cca	aca	ccc	ctg	cta	tac	aga	ctg	ggc	gct	gtt	cag	aat	gaa	atc	13863	
Gly	Pro	Thr	Pro	Leu	Leu	Tyr	Arg	Leu	Gly	Ala	Val	Gln	Asn	Glu	Ile		
		380			385				390					395			
acc	ctg	acg	cac	cca	gtc	acc	aaa	tac	atc	atg	aca	tgc	atg	tcg	gcc	13911	
Thr	Leu	Thr	His	Pro	Val	Thr	Lys	Tyr	Ile	Met	Thr	Cys	Met	Ser	Ala		
				400				405						410			
gac	ctg	gag	gtc	gtc	acg	agc	acc	tgg	gtg	ctc	gtt	ggc	ggc	gtc	ctg	13959	
Asp	Leu	Glu	Val	Val	Thr	Ser	Thr	Trp	Val	Leu	Val	Gly	Gly	Val	Leu		
			415					420					425				
gct	gct	ttg	gcc	gcg	tat	tgc	ctg	tca	aca	ggc	tgc	gtg	gtc	ata	gtg	14007	
Ala	Ala	Leu	Ala	Ala	Tyr	Cys	Leu	Ser	Thr	Gly	Cys	Val	Val	Ile	Val		
		430					435					440					
ggc	agg	gtc	gtc	ttg	tcc	ggg	aag	ccg	gca	atc	ata	cct	gac	agg	gaa	14055	
Gly	Arg	Val	Val	Leu	Ser	Gly	Lys	Pro	Ala	Ile	Ile	Pro	Asp	Arg	Glu		
		445				450					455						
gtc	ctc	tac	cga	gag	ttc	gat	gag	atg	gaa	gag	tgc	tct	cag	cac	tta	14103	
Val	Leu	Tyr	Arg	Glu	Phe	Asp	Glu	Met	Glu	Glu	Cys	Ser	Gln	His	Leu		
				465					470					475			
ccg	tac	atc	gag	caa	ggg	atg	atg	ctc	gcc	gag	cag	ttc	aag	cag	aag	14151	
Pro	Tyr	Ile	Glu	Gln	Gly	Met	Met	Leu	Ala	Glu	Gln	Phe	Lys	Gln	Lys		
				480				485					490				
gcc	ctc	ggc	ctc	ctg	cag	acc	gcg	tcc	cgt	cag	gca	gag	gtt	atc	gcc	14199	
Ala	Leu	Gly	Leu	Leu	Gln	Thr	Ala	Ser	Arg	Gln	Ala	Glu	Val	Ile	Ala		

495										500										505										
cct	gct	gtc	cag	acc	aac	tgg	caa	aaa	ctc	gag	acc	ttc	tgg	gcg	aag	14247														
Pro	Ala	Val	Gln	Thr	Asn	Trp	Gln	Lys	Leu	Glu	Thr	Phe	Trp	Ala	Lys															
510					515					520																				
cat	atg	tgg	aac	ttc	atc	agt	ggg	ata	caa	tac	ttg	gcg	ggc	ttg	tca	14295														
His	Met	Trp	Asn	Phe	Ile	Ser	Gly	Ile	Gln	Tyr	Leu	Ala	Gly	Leu	Ser															
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acg	ctg	cct	ggt	aac	ccc	gcc	att	gct	tca	ttg	atg	gct	ttt	aca	gct	14343														
Thr	Leu	Pro	Gly	Asn	Pro	Ala	Ile	Ala	Ser	Leu	Met	Ala	Phe	Thr	Ala															
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gct	gtc	acc	agc	cca	cta	acc	act	agc	caa	acc	ctc	ctc	ttc	aac	ata	14391														
Ala	Val	Thr	Ser	Pro	Leu	Thr	Thr	Ser	Gln	Thr	Leu	Leu	Phe	Asn	Ile															
560					565					570																				
ttg	ggg	ggg	tgg	gtg	gct	gcc	cag	ctc	gcc	gcc	ccc	ggt	gcc	gct	act	14439														
Leu	Gly	Gly	Trp	Val	Ala	Ala	Gln	Leu	Ala	Ala	Pro	Gly	Ala	Ala	Thr															
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gcc	ttt	gtg	ggc	gct	ggc	tta	gct	ggc	gcc	gcc	atc	ggc	agt	gtt	gga	14487														
Ala	Phe	Val	Gly	Ala	Gly	Leu	Ala	Gly	Ala	Ala	Ile	Gly	Ser	Val	Gly															
590					595					600																				
ctg	ggg	aag	gtc	ctc	ata	gac	atc	ctt	gca	ggg	tat	ggc	gcg	ggc	gtg	14535														
Leu	Gly	Lys	Val	Leu	Ile	Asp	Ile	Leu	Ala	Gly	Tyr	Gly	Ala	Gly	Val															
605					610					615																				
gcg	gga	gct	ctt	gtg	gca	ttc	aag	atc	atg	agc	ggt	gag	gtc	ccc	tcc	14583														
Ala	Gly	Ala	Leu	Val	Ala	Phe	Lys	Ile	Met	Ser	Gly	Glu	Val	Pro	Ser															
620					625					630					635															
acg	gag	gac	ctg	gtc	aat	cta	ctg	ccc	gcc	atc	ctc	tcg	ccc	gga	gcc	14631														
Thr	Glu	Asp	Leu	Val	Asn	Leu	Leu	Pro	Ala	Ile	Leu	Ser	Pro	Gly	Ala															
640					645					650																				
ctc	gta	gtc	ggc	gtg	gtc	tgt	gca	gca	ata	ctg	cgc	cgg	cac	gtt	ggc	14679														
Leu	Val	Val	Gly	Val	Val	Cys	Ala	Ala	Ile	Leu	Arg	Arg	His	Val	Gly															
655					660					665																				
ccg	ggc	gag	ggg	gca	gtg	cag	tgg	atg	aac	cgg	ctg	ata	gcc	ttc	gcc	14727														
Pro	Gly	Glu	Gly	Ala	Val	Gln	Trp	Met	Asn	Arg	Leu	Ile	Ala	Phe	Ala															
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tcc	cgg	ggg	aac	cat	gtt	tcc	ccc	acg	cac	tac	gtg	ccg	gag	agc	gat	14775														
Ser	Arg	Gly	Asn	His	Val	Ser	Pro	Thr	His	Tyr	Val	Pro	Glu	Ser	Asp															
685					690					695																				
gca	gct	gcc	cgc	gtc	act	gcc	ata	ctc	agc	agc	ctc	act	gta	acc	cag	14823														
Ala	Ala	Ala	Arg	Val	Thr	Ala	Ile	Leu	Ser	Ser	Leu	Thr	Val	Thr	Gln															
700					705					710					715															
ctc	ctg	agg	cga	ctg	cac	cag	tgg	ata	agc	tcg	gag	tgt	acc	act	cca	14871														
Leu	Leu	Arg	Arg	Leu	His	Gln	Trp	Ile	Ser	Ser	Glu	Cys	Thr	Thr	Pro															
720					725					730																				

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Cys Ser Gly Ser Trp Leu Arg Asp Ile Trp Asp Trp Ile Cys Glu Val	
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Leu Ser Asp Phe Lys Thr Trp Leu Lys Ala Lys Leu Met Pro Gln Leu	
750 755 760	
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Pro Gly Ile Pro Phe Val Ser Cys Gln Arg Gly Tyr Lys Gly Val Trp	
765 770 775	
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Arg Gly Asp Gly Ile Met His Thr Arg Cys His Cys Gly Ala Glu Ile	
780 785 790 795	
act gga cat gtc aaa aac ggg acg atg agg atc gtc ggt cct agg acc	15111
Thr Gly His Val Lys Asn Gly Thr Met Arg Ile Val Gly Pro Arg Thr	
800 805 810	
tgc agg aac atg tgg agt ggg acc ttc ccc att aat gcc tac acc acg	15159
Cys Arg Asn Met Trp Ser Gly Thr Phe Pro Ile Asn Ala Tyr Thr Thr	
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Gly Pro Cys Thr Pro Leu Pro Ala Pro Asn Tyr Thr Phe Ala Leu Trp	
830 835 840	
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Arg Val Ser Ala Glu Glu Tyr Val Glu Ile Arg Gln Val Gly Asp Phe	
845 850 855	
cac tac gtg acg ggt atg act act gac aat ctt aaa tgc ccg tgc cag	15303
His Tyr Val Thr Gly Met Thr Thr Asp Asn Leu Lys Cys Pro Cys Gln	
860 865 870 875	
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Val Pro Ser Pro Glu Phe Phe Thr Glu Leu Asp Gly Val Arg Leu His	
880 885 890	
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Arg Phe Ala Pro Pro Cys Lys Pro Leu Leu Arg Glu Glu Val Ser Phe	
895 900 905	
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Arg Val Gly Leu His Glu Tyr Pro Val Gly Ser Gln Leu Pro Cys Glu	
910 915 920	
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Pro Glu Pro Asp Val Ala Val Leu Thr Ser Met Leu Thr Asp Pro Ser	
925 930 935	
cat ata aca gca gag gcg gcc ggg cga agg ttg gcg agg gga tca ccc	15543
His Ile Thr Ala Glu Ala Ala Gly Arg Arg Leu Ala Arg Gly Ser Pro	
940 945 950 955	
ccc tct gtg gcc agc tcc tcg gct agc cag cta tcc gct cca tct ctc	15591

Pro Ser Val Ala Ser Ser Ser Ala Ser Gln Leu Ser Ala Pro Ser Leu	
960 965 970	
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Lys Ala Thr Cys Thr Ala Asn His Asp Ser Pro Asp Ala Glu Leu Ile	
975 980 985	
gag gcc aac ctc cta tgg agg cag gag atg ggc ggc aac atc acc agg	15687
Glu Ala Asn Leu Leu Trp Arg Gln Glu Met Gly Gly Asn Ile Thr Arg	
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Val Glu Ser Glu Asn Lys Val Val Ile Leu Asp Ser Phe Asp Pro Leu	
1005 1010 1015	
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Val Ala Glu Glu Asp Glu Arg Glu Ile Ser Val Pro Ala Glu Ile Leu	
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Arg Lys Ser Arg Arg Phe Ala Gln Ala Leu Pro Val Trp Ala Arg Pro	
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Asp Tyr Asn Pro Pro Leu Val Glu Thr Trp Lys Lys Pro Asp Tyr Glu	
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Pro Pro Val Val His Gly Cys Pro Leu Pro Pro Pro Lys Ser Pro Pro	
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Val Pro Pro Pro Arg Lys Lys Arg Thr Val Val Leu Thr Glu Ser Thr	
1085 1090 1095	
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Leu Ser Thr Ala Leu Ala Glu Leu Ala Thr Arg Ser Phe Gly Ser Ser	
1100 1105 1110 1115	
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Ser Thr Ser Gly Ile Thr Gly Asp Asn Thr Thr Thr Ser Ser Glu Pro	
1120 1125 1130	
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Ala Pro Ser Gly Cys Pro Pro Asp Ser Asp Ala Glu Ser Tyr Ser Ser	
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Met Pro Pro Leu Glu Gly Glu Pro Gly Asp Pro Asp Leu Ser Asp Gly	
1150 1155 1160	
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Ser Trp Ser Thr Val Ser Ser Glu Ala Asn Ala Glu Asp Val Val Cys	
1165 1170 1175	
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Cys Ser Met Ser Tyr Ser Trp Thr Gly Ala Leu Val Thr Pro Cys Ala	

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Ala Glu Glu Gln Lys Leu Pro Ile Asn Ala Leu Ser Asn Ser Leu Leu				
1200		1205	1210	
cgt cac cac aat ttg gtg tat tcc acc acc tca cgc agt gct tgc caa				16359
Arg His His Asn Leu Val Tyr Ser Thr Thr Ser Arg Ser Ala Cys Gln				
1215	1220		1225	
agg cag aag aaa gtc aca ttt gac aga ctg caa gtt ctg gac agc cat				16407
Arg Gln Lys Lys Val Thr Phe Asp Arg Leu Gln Val Leu Asp Ser His				
1230	1235		1240	
tac cag gac gta ctc aag gag gtt aaa gca gcg gcg tca aaa gtg aag				16455
Tyr Gln Asp Val Leu Lys Glu Val Lys Ala Ala Ala Ser Lys Val Lys				
1245	1250		1255	
gct aac ttg cta tcc gta gag gaa gct tgc agc ctg acg ccc cca cac				16503
Ala Asn Leu Leu Ser Val Glu Glu Ala Cys Ser Leu Thr Pro Pro His				
1260	1265	1270	1275	
tca gcc aaa tcc aag ttt ggt tat ggg gca aaa gac gtc cgt tgc cat				16551
Ser Ala Lys Ser Lys Phe Gly Tyr Gly Ala Lys Asp Val Arg Cys His				
1280	1285		1290	
gcc aga aag gcc gta acc cac atc aac tcc gtc tgg aaa gac ctt ctg				16599
Ala Arg Lys Ala Val Thr His Ile Asn Ser Val Trp Lys Asp Leu Leu				
1295	1300		1305	
gaa gac aat gta aca cca ata gac act acc atc atg gct aag aac gag				16647
Glu Asp Asn Val Thr Pro Ile Asp Thr Thr Ile Met Ala Lys Asn Glu				
1310	1315		1320	
gtt ttc tgc gtt cag cct gag aag ggg ggt cgt aag cca gct cgt ctc				16695
Val Phe Cys Val Gln Pro Glu Lys Gly Gly Arg Lys Pro Ala Arg Leu				
1325	1330		1335	
atc gtg ttc ccc gat ctg ggc gtg cgc gtg tgc gaa aag atg gct ttg				16743
Ile Val Phe Pro Asp Leu Gly Val Arg Val Cys Glu Lys Met Ala Leu				
1340	1345	1350	1355	
tac gac gtg gtt aca aag ctc ccc ttg gcc gtg atg gga agc tcc tac				16791
Tyr Asp Val Val Thr Lys Leu Pro Leu Ala Val Met Gly Ser Ser Tyr				
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gga ttc caa tac tca cca gga cag cgg gtt gaa ttc ctc gtg caa gcg				16839
Gly Phe Gln Tyr Ser Pro Gly Gln Arg Val Glu Phe Leu Val Gln Ala				
1375	1380		1385	
tgg aag tcc aag aaa acc cca atg ggg ttc tcg tat gat acc cgc tgc				16887
Trp Lys Ser Lys Lys Thr Pro Met Gly Phe Ser Tyr Asp Thr Arg Cys				
1390	1395		1400	
ttt gac tcc aca gtc act gag agc gac atc cgt acg gag gag gca atc				16935
Phe Asp Ser Thr Val Thr Glu Ser Asp Ile Arg Thr Glu Glu Ala Ile				
1405	1410	1415		

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Tyr Gln Cys Cys Asp Leu Asp Pro Gln Ala Arg Val Ala Ile Lys Ser	
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ctc acc gag agg ctt tat gtt ggg ggc cct ctt acc aat tca agg ggg	17031
Leu Thr Glu Arg Leu Tyr Val Gly Gly Pro Leu Thr Asn Ser Arg Gly	
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Glu Asn Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Thr Thr	
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agc tgt ggt aac acc ctc act tgc tac atc aag gcc cgg gca gcc tgt	17127
Ser Cys Gly Asn Thr Leu Thr Cys Tyr Ile Lys Ala Arg Ala Ala Cys	
1470 1475 1480	
cga gcc gca ggg ctc cag gac tgc acc atg ctc gtg tgt ggc gac gac	17175
Arg Ala Ala Gly Leu Gln Asp Cys Thr Met Leu Val Cys Gly Asp Asp	
1485 1490 1495	
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Leu Val Val Ile Cys Glu Ser Ala Gly Val Gln Glu Asp Ala Ala Ser	
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Leu Arg Ala Phe Thr Glu Ala Met Thr Arg Tyr Ser Ala Pro Pro Gly	
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Asp Pro Pro Gln Pro Glu Tyr Asp Leu Glu Leu Ile Thr Ser Cys Ser	
1535 1540 1545	
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Ser Asn Val Ser Val Ala His Asp Gly Ala Gly Lys Arg Val Tyr Tyr	
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Leu Thr Arg Asp Pro Thr Thr Pro Leu Ala Arg Ala Ala Trp Glu Thr	
1565 1570 1575	
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Ala Arg His Thr Pro Val Asn Ser Trp Leu Gly Asn Ile Ile Met Phe	
1580 1585 1590 1595	
gcc ccc aca ctg tgg gcg agg atg ata ctg atg acc cat ttc ttt agc	17511
Ala Pro Thr Leu Trp Ala Arg Met Ile Leu Met Thr His Phe Phe Ser	
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gtc ctt ata gcc agg gac cag ctt gaa cag gcc ctc gat tgc gag atc	17559
Val Leu Ile Ala Arg Asp Gln Leu Glu Gln Ala Leu Asp Cys Glu Ile	
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Met Ser Lys	Ala His Gly	Ile Asp Pro	Asn Ile Arg Thr	Gly Val Arg		
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Thr Ile Thr	Thr Gly Ser	Pro Ile Thr	Tyr Ser Thr	Tyr Gly Lys	Phe	
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Asp Glu Cys	His Ser Thr	Asp Ala Thr	Ser Ile Leu	Gly Ile Gly	Thr	
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Val Leu Asp	Gln Ala Glu	Thr Ala Gly	Ala Arg Leu	Val Val Val	Leu Ala	
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His	Met	Trp	Asn	Phe	Ile	Ser	Gly	Ile	Gln	Tyr	Leu	Ala	Gly	Leu	Ser																																																			
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Thr	Glu	Asp	Leu	Val	Asn	Leu	Leu	Pro	Ala	Ile	Leu	Ser	Pro	Gly	Ala	
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Ser	Arg	Gly	Asn	His	Val	Ser	Pro	Thr	His	Tyr	Val	Pro	Glu	Ser	Asp	
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gca	gct	gcc	cgc	gtc	act	gcc	ata	ctc	agc	agc	ctc	act	gta	acc	cag	14823
Ala	Ala	Ala	Arg	Val	Thr	Ala	Ile	Leu	Ser	Ser	Leu	Thr	Val	Thr	Gln	
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Cys	Ser	Gly	Ser	Trp	Leu	Arg	Asp	Ile	Trp	Asp	Trp	Ile	Cys	Glu	Val	
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Pro	Gly	Ile	Pro	Phe	Val	Ser	Cys	Gln	Arg	Gly	Tyr	Lys	Gly	Val	Trp	
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Asp Tyr Asn	Pro Pro Leu	Val Glu Thr	Trp Lys Lys	Pro Asp Tyr	Glu		15879												
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Pro Pro Val	Val His Gly	Cys Pro Leu	Pro Pro Pro	Lys Ser Pro	Pro		15927												
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Ser Thr Ser	Gly Ile Thr	Gly Asp Asn	Thr Thr Thr	Ser Ser Glu	Pro		16071												
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Cys Ser Met	Ser Tyr Ser	Trp Thr Gly	Ala Leu Val	Thr Pro Cys	Ala		16263												
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Ala Glu Glu	Gln Lys Leu	Pro Ile Asn	Ala Leu Ser	Asn Ser Leu	Leu		16311												
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Arg His His	Asn Leu Val	Tyr Ser Thr	Thr Ser Arg	Ser Ala Cys	Gln		16359												
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Ile	Pro	Lys	Ala	Arg	Arg	Pro	Glu	Gly	Arg	Thr	Trp	Ala	Gln	Pro	Gly	
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<223> Description of Artificial Sequence:
pd.delta.NS3NS5.pj.core140

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35 40 45
Ser Pro Ile Thr Tyr Ser Thr Tyr Gly Lys Phe Leu Ala Asp Gly Gly
50 55 60
Cys Ser Gly Gly Ala Tyr Asp Ile Ile Ile Cys Asp Glu Cys His Ser
65 70 75 80
Thr Asp Ala Thr Ser Ile Leu Gly Ile Gly Thr Val Leu Asp Gln Ala
85 90 95
Glu Thr Ala Gly Ala Arg Leu Val Val Leu Ala Thr Ala Thr Pro Pro
100 105 110
Gly Ser Val Thr Val Pro His Pro Asn Ile Glu Glu Val Ala Leu Ser
115 120 125
Thr Thr Gly Glu Ile Pro Phe Tyr Gly Lys Ala Ile Pro Leu Glu Val
130 135 140
Ile Lys Gly Gly Arg His Leu Ile Phe Cys His Ser Lys Lys Lys Cys
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Asp Glu Leu Ala Ala Lys Leu Val Ala Leu Gly Ile Asn Ala Val Ala
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Tyr Tyr Arg Gly Leu Asp Val Ser Val Ile Pro Thr Ser Gly Asp Val
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Val Val Val Ala Thr Asp Ala Leu Met Thr Gly Tyr Thr Gly Asp Phe
195 200 205
Asp Ser Val Ile Asp Cys Asn Thr Cys Val Thr Gln Thr Val Asp Phe
210 215 220
Ser Leu Asp Pro Thr Phe Thr Ile Glu Thr Ile Thr Leu Pro Gln Asp
225 230 235 240
Ala Val Ser Arg Thr Gln Arg Arg Gly Arg Thr Gly Arg Gly Lys Pro
245 250 255
Gly Ile Tyr Arg Phe Val Ala Pro Gly Glu Arg Pro Ser Gly Met Phe
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Asp	Ser	Ser	Val	Leu	Cys	Glu	Cys	Tyr	Asp	Ala	Gly	Cys	Ala	Trp	Tyr	
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Glu	Leu	Thr	Pro	Ala	Glu	Thr	Thr	Val	Arg	Leu	Arg	Ala	Tyr	Met	Asn	
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Thr	Pro	Gly	Leu	Pro	Val	Cys	Gln	Asp	His	Leu	Glu	Phe	Trp	Glu	Gly	
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Val	Phe	Thr	Gly	Leu	Thr	His	Ile	Asp	Ala	His	Phe	Leu	Ser	Gln	Thr	
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Lys	Gln	Ser	Gly	Glu	Asn	Leu	Pro	Tyr	Leu	Val	Ala	Tyr	Gln	Ala	Thr	
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Thr	Ser	Thr	Trp	Val	Leu	Val	Gly	Gly	Val	Leu	Ala	Ala	Leu	Ala	Ala	
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Gln	Thr	Ala	Ser	Arg	Gln	Ala	Glu	Val	Ile	Ala	Pro	Ala	Val	Gln	Thr	
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Asn	Trp	Gln	Lys	Leu	Glu	Thr	Phe	Trp	Ala	Lys	His	Met	Trp	Asn	Phe	
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Leu	Thr	Thr	Ser	Gln	Thr	Leu	Leu	Phe	Asn	Ile	Leu	Gly	Gly	Trp	Val	
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Ala	Phe	Lys	Ile	Met	Ser	Gly	Glu	Val	Pro	Ser	Thr	Glu	Asp	Leu	Val	
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Asn	Leu	Leu	Pro	Ala	Ile	Leu	Ser	Pro	Gly	Ala	Leu	Val	Val	Gly	Val	
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Thr	Ala	Ile	Leu	Ser	Ser	Leu	Thr	Val	Thr	Gln	Leu	Leu	Arg	Arg	Leu	
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Gln Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val Val Ile Cys		
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Glu Tyr Asp Leu Glu Leu Ile Thr Ser Cys Ser Ser Asn Val Ser Val		
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Ala His Asp Gly Ala Gly Lys Arg Val Tyr Tyr Leu Thr Arg Asp Pro		
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Thr Thr Pro Leu Ala Arg Ala Ala Trp Glu Thr Ala Arg His Thr Pro		
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Val Asn Ser Trp Leu Gly Asn Ile Ile Met Phe Ala Pro Thr Leu Trp		
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Ala Arg Met Ile Leu Met Thr His Phe Phe Ser Val Leu Ile Ala Arg		
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agtctttttt ttagttttta aacaccaaga acttagtttc gaataaacac acataaacia 12660
acaagcttac aaaacaaa atg gct gca tat gca gct cag ggc tat aag gtc 12711

Met	Ala	Ala	Tyr	Ala	Ala	Gln	Gly	Tyr	Lys	Val	
1				5					10		
cta gta ctc aac ccc tct gtt gct gca aca ctg ggc ttt ggt gct tac	12759										
Leu Val Leu Asn Pro Ser Val Ala Ala Thr Leu Gly Phe Gly Ala Tyr											
15				20					25		
atg tcc aag gct cat ggg atc gat cct aac atc agg acc ggg gtg aga	12807										
Met Ser Lys Ala His Gly Ile Asp Pro Asn Ile Arg Thr Gly Val Arg											
30				35					40		
aca att acc act ggc agc ccc atc acg tac tcc acc tac ggc aag ttc	12855										
Thr Ile Thr Thr Gly Ser Pro Ile Thr Tyr Ser Thr Tyr Gly Lys Phe											
45				50					55		
ctt gcc gac ggc ggg tgc tgc ggg ggc gct tat gac ata ata att tgt	12903										
Leu Ala Asp Gly Gly Cys Ser Gly Gly Ala Tyr Asp Ile Ile Ile Cys											
60				65					70		75
gac gag tgc cac tcc acg gat gcc aca tcc atc ttg ggc att ggc act	12951										
Asp Glu Cys His Ser Thr Asp Ala Thr Ser Ile Leu Gly Ile Gly Thr											
80				85					90		
gtc ctt gac caa gca gag act gcg ggg gcg aga ctg gtt gtg ctc gcc	12999										
Val Leu Asp Gln Ala Glu Thr Ala Gly Ala Arg Leu Val Val Leu Ala											
95				100					105		
acc gcc acc cct ccg ggc tcc gtc act gtg ccc cat ccc aac atc gag	13047										
Thr Ala Thr Pro Pro Gly Ser Val Thr Val Pro His Pro Asn Ile Glu											
110				115					120		
gag gtt gct ctg tcc acc acc gga gag atc cct ttt tac ggc aag gct	13095										
Glu Val Ala Leu Ser Thr Thr Gly Glu Ile Pro Phe Tyr Gly Lys Ala											
125				130					135		
atc ccc ctc gaa gta atc aag ggg ggg aga cat ctc atc ttc tgt cat	13143										
Ile Pro Leu Glu Val Ile Lys Gly Gly Arg His Leu Ile Phe Cys His											
140				145					150		155
tca aag aag aag tgc gac gaa ctc gcc gca aag ctg gtc gca ttg ggc	13191										
Ser Lys Lys Lys Cys Asp Glu Leu Ala Ala Lys Leu Val Ala Leu Gly											
160				165					170		
atc aat gcc gtg gcc tac tac cgc ggt ctt gac gtg tcc gtc atc ccg	13239										
Ile Asn Ala Val Ala Tyr Tyr Arg Gly Leu Asp Val Ser Val Ile Pro											
175				180					185		
acc agc ggc gat gtt gtc gtc gtg gca acc gat gcc ctc atg acc ggc	13287										
Thr Ser Gly Asp Val Val Val Val Ala Thr Asp Ala Leu Met Thr Gly											
190				195					200		
tat acc ggc gac ttc gac tgc gtg ata gac tgc aat acg tgt gtc acc	13335										
Tyr Thr Gly Asp Phe Asp Ser Val Ile Asp Cys Asn Thr Cys Val Thr											
205				210					215		
cag aca gtc gat ttc agc ctc gac cct acc ttc acc att gag aca atc	13383										
Gln Thr Val Asp Phe Ser Leu Asp Pro Thr Phe Thr Ile Glu Thr Ile											

220				225				230				235				
acg	ctc	ccc	caa	gat	gct	gtc	tcc	cgc	act	caa	cgt	cgg	ggc	agg	act	13431
Thr	Leu	Pro	Gln	Asp	Ala	Val	Ser	Arg	Thr	Gln	Arg	Arg	Gly	Arg	Thr	
240				245				250								
ggc	agg	ggg	aag	cca	ggc	atc	tac	aga	ttt	gtg	gca	ccg	ggg	gag	cgc	13479
Gly	Arg	Gly	Lys	Pro	Gly	Ile	Tyr	Arg	Phe	Val	Ala	Pro	Gly	Glu	Arg	
255				260				265								
ccc	tcc	ggc	atg	ttc	gac	tcg	tcc	gtc	ctc	tgt	gag	tgc	tat	gac	gca	13527
Pro	Ser	Gly	Met	Phe	Asp	Ser	Ser	Val	Leu	Cys	Glu	Cys	Tyr	Asp	Ala	
270				275				280								
ggc	tgt	gct	tgg	tat	gag	ctc	acg	ccc	gcc	gag	act	aca	ggt	agg	cta	13575
Gly	Cys	Ala	Trp	Tyr	Glu	Leu	Thr	Pro	Ala	Glu	Thr	Thr	Val	Arg	Leu	
285				290				295								
cga	gcg	tac	atg	aac	acc	ccg	ggg	ctt	ccc	gtg	tgc	cag	gac	cat	ctt	13623
Arg	Ala	Tyr	Met	Asn	Thr	Pro	Gly	Leu	Pro	Val	Cys	Gln	Asp	His	Leu	
300				305				310								
gaa	ttt	tgg	gag	ggc	gtc	ttt	aca	ggc	ctc	act	cat	ata	gat	gcc	cac	13671
Glu	Phe	Trp	Glu	Gly	Val	Phe	Thr	Gly	Leu	Thr	His	Ile	Asp	Ala	His	
320				325				330								
ttt	cta	tcc	cag	aca	aag	cag	agt	ggg	gag	aac	ctt	cct	tac	ctg	gta	13719
Phe	Leu	Ser	Gln	Thr	Lys	Gln	Ser	Gly	Glu	Asn	Leu	Pro	Tyr	Leu	Val	
335				340				345								
gcg	tac	caa	gcc	acc	gtg	tgc	gct	agg	gct	caa	gcc	cct	ccc	cca	tcg	13767
Ala	Tyr	Gln	Ala	Thr	Val	Cys	Ala	Arg	Ala	Gln	Ala	Pro	Pro	Pro	Ser	
350				355				360								
tgg	gac	cag	atg	tgg	aag	tgt	ttg	att	cgc	ctc	aag	ccc	acc	ctc	cat	13815
Trp	Asp	Gln	Met	Trp	Lys	Cys	Leu	Ile	Arg	Leu	Lys	Pro	Thr	Leu	His	
365				370				375								
ggg	cca	aca	ccc	ctg	cta	tac	aga	ctg	ggc	gct	gtt	cag	aat	gaa	atc	13863
Gly	Pro	Thr	Pro	Leu	Leu	Tyr	Arg	Leu	Gly	Ala	Val	Gln	Asn	Glu	Ile	
380				385				390								
acc	ctg	acg	cac	cca	gtc	acc	aaa	tac	atc	atg	aca	tgc	atg	tcg	gcc	13911
Thr	Leu	Thr	His	Pro	Val	Thr	Lys	Tyr	Ile	Met	Thr	Cys	Met	Ser	Ala	
400				405				410								
gac	ctg	gag	gtc	gtc	acg	agc	acc	tgg	gtg	ctc	gtt	ggc	ggc	gtc	ctg	13959
Asp	Leu	Glu	Val	Val	Thr	Ser	Thr	Trp	Val	Leu	Val	Gly	Gly	Val	Leu	
415				420				425								
gct	gct	ttg	gcc	gcg	tat	tgc	ctg	tca	aca	ggc	tgc	gtg	gtc	ata	gtg	14007
Ala	Ala	Leu	Ala	Ala	Tyr	Cys	Leu	Ser	Thr	Gly	Cys	Val	Val	Ile	Val	
430				435				440								
ggc	agg	gtc	gtc	ttg	tcc	ggg	aag	ccg	gca	atc	ata	cct	gac	agg	gaa	14055
Gly	Arg	Val	Val	Leu	Ser	Gly	Lys	Pro	Ala	Ile	Ile	Pro	Asp	Arg	Glu	
445				450				455								

gtc	ctc	tac	cga	gag	ttc	gat	gag	atg	gaa	gag	tgc	tct	cag	cac	tta	14103
Val	Leu	Tyr	Arg	Glu	Phe	Asp	Glu	Met	Glu	Glu	Cys	Ser	Gln	His	Leu	
460					465					470					475	
ccg	tac	atc	gag	caa	ggg	atg	atg	ctc	gcc	gag	cag	ttc	aag	cag	aag	14151
Pro	Tyr	Ile	Glu	Gln	Gly	Met	Met	Leu	Ala	Glu	Gln	Phe	Lys	Gln	Lys	
				480					485						490	
gcc	ctc	ggc	ctc	ctg	cag	acc	gcg	tcc	cgt	cag	gca	gag	gtt	atc	gcc	14199
Ala	Leu	Gly	Leu	Leu	Gln	Thr	Ala	Ser	Arg	Gln	Ala	Glu	Val	Ile	Ala	
			495					500					505			
cct	gct	gtc	cag	acc	aac	tgg	caa	aaa	ctc	gag	acc	ttc	tgg	gcg	aag	14247
Pro	Ala	Val	Gln	Thr	Asn	Trp	Gln	Lys	Leu	Glu	Thr	Phe	Trp	Ala	Lys	
		510					515					520				
cat	atg	tgg	aac	ttc	atc	agt	ggg	ata	caa	tac	ttg	ggg	ggc	ttg	tca	14295
His	Met	Trp	Asn	Phe	Ile	Ser	Gly	Ile	Gln	Tyr	Leu	Ala	Gly	Leu	Ser	
	525					530					535					
acg	ctg	cct	ggt	aac	ccc	gcc	att	gct	tca	ttg	atg	gct	ttt	aca	gct	14343
Thr	Leu	Pro	Gly	Asn	Pro	Ala	Ile	Ala	Ser	Leu	Met	Ala	Phe	Thr	Ala	
540				545						550					555	
gct	gtc	acc	agc	cca	cta	acc	act	agc	caa	acc	ctc	ctc	ttc	aac	ata	14391
Ala	Val	Thr	Ser	Pro	Leu	Thr	Thr	Ser	Gln	Thr	Leu	Leu	Phe	Asn	Ile	
				560					565					570		
ttg	ggg	ggg	tgg	gtg	gct	gcc	cag	ctc	gcc	gcc	ccc	ggt	gcc	gct	act	14439
Leu	Gly	Gly	Trp	Val	Ala	Ala	Gln	Leu	Ala	Ala	Pro	Gly	Ala	Ala	Thr	
			575				580					585				
gcc	ttt	gtg	ggc	gct	ggc	tta	gct	ggc	gcc	gcc	atc	ggc	agt	gtt	gga	14487
Ala	Phe	Val	Gly	Ala	Gly	Leu	Ala	Gly	Ala	Ala	Ile	Gly	Ser	Val	Gly	
		590					595					600				
ctg	ggg	aag	gtc	ctc	ata	gac	atc	ctt	gca	ggg	tat	ggc	gcg	ggc	gtg	14535
Leu	Gly	Lys	Val	Leu	Ile	Asp	Ile	Leu	Ala	Gly	Tyr	Gly	Ala	Gly	Val	
	605					610					615					
gcg	gga	gct	ctt	gtg	gca	ttc	aag	atc	atg	agc	ggt	gag	gtc	ccc	tcc	14583
Ala	Gly	Ala	Leu	Val	Ala	Phe	Lys	Ile	Met	Ser	Gly	Glu	Val	Pro	Ser	
620				625						630					635	
acg	gag	gac	ctg	gtc	aat	cta	ctg	ccc	gcc	atc	ctc	tcg	ccc	gga	gcc	14631
Thr	Glu	Asp	Leu	Val	Asn	Leu	Leu	Pro	Ala	Ile	Leu	Ser	Pro	Gly	Ala	
				640					645					650		
ctc	gta	gtc	ggc	gtg	gtc	tgt	gca	gca	ata	ctg	cgc	cgg	cac	gtt	ggc	14679
Leu	Val	Val	Gly	Val	Val	Cys	Ala	Ala	Ile	Leu	Arg	Arg	His	Val	Gly	
			655				660						665			
ccg	gg															

910	915	920	
ccc gaa ccg gac gtg gcc gtg ttg acg tcc atg ctc act gat ccc tcc			15495
Pro Glu Pro Asp Val Ala Val Leu Thr Ser Met Leu Thr Asp Pro Ser			
925	930	935	
cat ata aca gca gag gcg gcc ggg cga agg ttg gcg agg gga tca ccc			15543
His Ile Thr Ala Glu Ala Ala Gly Arg Arg Leu Ala Arg Gly Ser Pro			
940	945	950	955
ccc tct gtg gcc agc tcc tcg gct agc cag cta tcc gct cca tct ctc			15591
Pro Ser Val Ala Ser Ser Ser Ala Ser Gln Leu Ser Ala Pro Ser Leu			
	960	965	970
aag gca act tgc acc gct aac cat gac tcc cct gat gct gag ctc ata			15639
Lys Ala Thr Cys Thr Ala Asn His Asp Ser Pro Asp Ala Glu Leu Ile			
	975	980	985
gag gcc aac ctc cta tgg agg cag gag atg ggc ggc aac atc acc agg			15687
Glu Ala Asn Leu Leu Trp Arg Gln Glu Met Gly Gly Asn Ile Thr Arg			
	990	995	1000
gtt gag tca gaa aac aaa gtg gtg att ctg gac tcc ttc gat ccg ctt			15735
Val Glu Ser Glu Asn Lys Val Val Ile Leu Asp Ser Phe Asp Pro Leu			
1005	1010	1015	
gtg gcg gag gag gac gag cgg gag atc tcc gta ccc gca gaa atc ctg			15783
Val Ala Glu Glu Asp Glu Arg Glu Ile Ser Val Pro Ala Glu Ile Leu			
1020	1025	1030	1035
cgg aag tct cgg aga ttc gcc cag gcc ctg ccc gtt tgg gcg cgg ccg			15831
Arg Lys Ser Arg Arg Phe Ala Gln Ala Leu Pro Val Trp Ala Arg Pro			
	1040	1045	1050
gac tat aac ccc ccg cta gtg gag acg tgg aaa aag ccc gac tac gaa			15879
Asp Tyr Asn Pro Pro Leu Val Glu Thr Trp Lys Lys Pro Asp Tyr Glu			
	1055	1060	1065
cca cct gtg gtc cat ggc tgc ccg ctt cca cct cca aag tcc cct cct			15927
Pro Pro Val Val His Gly Cys Pro Leu Pro Pro Pro Lys Ser Pro Pro			
1070	1075	1080	
gtg cct ccg cct cgg aag aag cgg acg gtg gtc ctc act gaa tca acc			15975
Val Pro Pro Pro Arg Lys Lys Arg Thr Val Val Leu Thr Glu Ser Thr			
1085	1090	1095	
cta tct act gcc ttg gcc gag ctc gcc acc aga agc ttt ggc agc tcc			16023
Leu Ser Thr Ala Leu Ala Glu Leu Ala Thr Arg Ser Phe Gly Ser Ser			
1100	1105	1110	1115
tca act tcc ggc att acg ggc gac aat acg aca aca tcc tct gag ccc			16071
Ser Thr Ser Gly Ile Thr Gly Asp Asn Thr Thr Thr Ser Ser Glu Pro			
	1120	1125	1130
gcc cct tct ggc tgc ccc ccc gac tcc gac gct gag tcc tat tcc tcc			16119
Ala Pro Ser Gly Cys Pro Pro Asp Ser Asp Ala Glu Ser Tyr Ser Ser			
	1135	1140	1145

atg ccc ccc ctg gag ggg gag cct ggg gat ccg gat ctt agc gac ggg	16167
Met Pro Pro Leu Glu Gly Glu Pro Gly Asp Pro Asp Leu Ser Asp Gly	
1150 1155 1160	
tca tgg tca acg gtc agt agt gag gcc aac gcg gag gat gtc gtg tgc	16215
Ser Trp Ser Thr Val Ser Ser Glu Ala Asn Ala Glu Asp Val Val Cys	
1165 1170 1175	
tgc tca atg tct tac tct tgg aca ggc gca ctc gtc acc ccg tgc gcc	16263
Cys Ser Met Ser Tyr Ser Trp Thr Gly Ala Leu Val Thr Pro Cys Ala	
1180 1185 1190 1195	
gcg gaa gaa cag aaa ctg ccc atc aat gca cta agc aac tgc ttg cta	16311
Ala Glu Glu Gln Lys Leu Pro Ile Asn Ala Leu Ser Asn Ser Leu Leu	
1200 1205 1210	
cgt cac cac aat ttg gtg tat tcc acc acc tca cgc agt gct tgc caa	16359
Arg His His Asn Leu Val Tyr Ser Thr Thr Ser Arg Ser Ala Cys Gln	
1215 1220 1225	
agg cag aag aaa gtc aca ttt gac aga ctg caa gtt ctg gac agc cat	16407
Arg Gln Lys Lys Val Thr Phe Asp Arg Leu Gln Val Leu Asp Ser His	
1230 1235 1240	
tac cag gac gta ctc aag gag gtt aaa gca gcg gcg tca aaa gtg aag	16455
Tyr Gln Asp Val Leu Lys Glu Val Lys Ala Ala Ala Ser Lys Val Lys	
1245 1250 1255	
gct aac ttg cta tcc gta gag gaa gct tgc agc ctg acg ccc cca cac	16503
Ala Asn Leu Leu Ser Val Glu Glu Ala Cys Ser Leu Thr Pro Pro His	
1260 1265 1270 1275	
tca gcc aaa tcc aag ttt ggt tat ggg gca aaa gac gtc cgt tgc cat	16551
Ser Ala Lys Ser Lys Phe Gly Tyr Gly Ala Lys Asp Val Arg Cys His	
1280 1285 1290	
gcc aga aag gcc gta acc cac atc aac tcc gtg tgg aaa gac ctt ctg	16599
Ala Arg Lys Ala Val Thr His Ile Asn Ser Val Trp Lys Asp Leu Leu	
1295 1300 1305	
gaa gac aat gta aca cca ata gac act acc atc atg gct aag aac gag	16647
Glu Asp Asn Val Thr Pro Ile Asp Thr Thr Ile Met Ala Lys Asn Glu	
1310 1315 1320	
gtt ttc tgc gtt cag cct gag aag ggg ggt cgt aag cca gct cgt ctc	16695
Val Phe Cys Val Gln Pro Glu Lys Gly Gly Arg Lys Pro Ala Arg Leu	
1325 1330 1335	
atc gtg ttc ccc gat ctg ggc gtg cgc gtg tgc gaa aag atg gct ttg	16743
Ile Val Phe Pro Asp Leu Gly Val Arg Val Cys Glu Lys Met Ala Leu	
1340 1345 1350 1355	
tac gac gtg gtt aca aag ctc ccc ttg gcc gtg atg gga agc tcc tac	16791
Tyr Asp Val Val Thr Lys Leu Pro Leu Ala Val Met Gly Ser Ser Tyr	
1360 1365 1370	
gga ttc caa tac tca cca gga cag cgg gtt gaa ttc ctc gtg caa gcg	16839

Gly Phe Gln Tyr Ser Pro Gly Gln Arg Val Glu Phe Leu Val Gln Ala	
1375 1380 1385	
tgg aag tcc aag aaa acc cca atg ggg ttc tgc tat gat acc cgc tgc	16887
Trp Lys Ser Lys Lys Thr Pro Met Gly Phe Ser Tyr Asp Thr Arg Cys	
1390 1395 1400	
ttt gac tcc aca gtc act gag agc gac atc cgt acg gag gag gca atc	16935
Phe Asp Ser Thr Val Thr Glu Ser Asp Ile Arg Thr Glu Glu Ala Ile	
1405 1410 1415	
tac caa tgt tgt gac ctc gac ccc caa gcc cgc gtg gcc atc aag tcc	16983
Tyr Gln Cys Cys Asp Leu Asp Pro Gln Ala Arg Val Ala Ile Lys Ser	
1420 1425 1430 1435	
ctc acc gag agg ctt tat gtt ggg ggc cct ctt acc aat tca agg ggg	17031
Leu Thr Glu Arg Leu Tyr Val Gly Gly Pro Leu Thr Asn Ser Arg Gly	
1440 1445 1450	
gag aac tgc ggc tat cgc agg tgc cgc gcg agc ggc gta ctg aca act	17079
Glu Asn Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Thr Thr	
1455 1460 1465	
agc tgt ggt aac acc ctc act tgc tac atc aag gcc cgg gca gcc tgt	17127
Ser Cys Gly Asn Thr Leu Thr Cys Tyr Ile Lys Ala Arg Ala Ala Cys	
1470 1475 1480	
cga gcc gca ggg ctc cag gac tgc acc atg ctc gtg tgt ggc gac gac	17175
Arg Ala Ala Gly Leu Gln Asp Cys Thr Met Leu Val Cys Gly Asp Asp	
1485 1490 1495	
tta gtc gtt atc tgt gaa agc gcg ggg gtc cag gag gac gcg gcg agc	17223
Leu Val Val Ile Cys Glu Ser Ala Gly Val Gln Glu Asp Ala Ala Ser	
1500 1505 1510 1515	
ctg aga gcc ttc acg gag gct atg acc agg tac tcc gcc ccc cct ggg	17271
Leu Arg Ala Phe Thr Glu Ala Met Thr Arg Tyr Ser Ala Pro Pro Gly	
1520 1525 1530	
gac ccc cca caa cca gaa tac gac ttg gag ctc ata aca tca tgc tcc	17319
Asp Pro Pro Gln Pro Glu Tyr Asp Leu Glu Leu Ile Thr Ser Cys Ser	
1535 1540 1545	
tcc aac gtg tca gtc gcc cac gac ggc gct gga aag agg gtc tac tac	17367
Ser Asn Val Ser Val Ala His Asp Gly Ala Gly Lys Arg Val Tyr Tyr	
1550 1555 1560	
ctc acc cgt gac cct aca acc ccc ctc gcg aga gct gcg tgg gag aca	17415
Leu Thr Arg Asp Pro Thr Thr Pro Leu Ala Arg Ala Ala Trp Glu Thr	
1565 1570 1575	
gca aga cac act cca gtc aat tcc tgg cta ggc aac ata atc atg ttt	17463
Ala Arg His Thr Pro Val Asn Ser Trp Leu Gly Asn Ile Ile Met Phe	
1580 1585 1590 1595	
gcc ccc aca ctg tgg gcg agg atg ata ctg atg acc cat ttc ttt agc	17511
Ala Pro Thr Leu Trp Ala Arg Met Ile Leu Met Thr His Phe Phe Ser	

1600	1605	1610	
gtc ctt ata gcc agg gac cag ctt gaa cag gcc ctc gat tgc gag atc			17559
Val Leu Ile Ala Arg Asp Gln Leu Glu Gln Ala Leu Asp Cys Glu Ile			
1615	1620	1625	
tac ggg gcc tgc tac tcc ata gaa cca ctg gat cta cct cca atc att			17607
Tyr Gly Ala Cys Tyr Ser Ile Glu Pro Leu Asp Leu Pro Pro Ile Ile			
1630	1635	1640	
caa aga ctc cat ggc ctc agc gca ttt tca ctc cac agt tac tct cca			17655
Gln Arg Leu His Gly Leu Ser Ala Phe Ser Leu His Ser Tyr Ser Pro			
1645	1650	1655	
ggg gaa atc aat agg gtg gcc gca tgc ctc aga aaa ctt ggg gta ccg			17703
Gly Glu Ile Asn Arg Val Ala Ala Cys Leu Arg Lys Leu Gly Val Pro			
1660	1665	1670	1675
ccc ttg cga gct tgg aga cac cgg gcc cgg agc gtc cgc gct agg ctt			17751
Pro Leu Arg Ala Trp Arg His Arg Ala Arg Ser Val Arg Ala Arg Leu			
1680	1685	1690	
ctg gcc aga gga ggc agg gct gcc ata tgt ggc aag tac ctc ttc aac			17799
Leu Ala Arg Gly Gly Arg Ala Ala Ile Cys Gly Lys Tyr Leu Phe Asn			
1695	1700	1705	
tgg gca gta aga aca aag ctc aaa ctc act cca ata gcg gcc gct ggc			17847
Trp Ala Val Arg Thr Lys Leu Lys Leu Thr Pro Ile Ala Ala Ala Gly			
1710	1715	1720	
cag ctg gac ttg tcc ggc tgg ttc acg gct ggc tac agc ggg gga gac			17895
Gln Leu Asp Leu Ser Gly Trp Phe Thr Ala Gly Tyr Ser Gly Gly Asp			
1725	1730	1735	
att tat cac agc gtg tct cat gcc cgg ccc cgc tgg atc tgg ttt tgc			17943
Ile Tyr His Ser Val Ser His Ala Arg Pro Arg Trp Ile Trp Phe Cys			
1740	1745	1750	1755
cta ctc ctg ctt gct gca ggg gta ggc atc tac ctc ctc ccc aac cga			17991
Leu Leu Leu Leu Ala Ala Gly Val Gly Ile Tyr Leu Leu Pro Asn Arg			
1760	1765	1770	
atg agc acg aat cct aaa cct caa aga aag acc aaa cgt aac acc aac			18039
Met Ser Thr Asn Pro Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn			
1775	1780	1785	
cgg cgg ccg cag gac gtc aag ttc ccg ggt ggc ggt cag atc gtt ggt			18087
Arg Arg Pro Gln Asp Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly			
1790	1795	1800	
gga gtt tac ttg ttg ccg cgc agc ggc cct aga ttg ggt gtg cgc gcg			18135
Gly Val Tyr Leu Leu Pro Arg Arg Gly Pro Arg Leu Gly Val Arg Ala			
1805	1810	1815	
acg aga aag act tcc gag cgg tcg caa cct cga ggt aga cgt cag cct			18183
Thr Arg Lys Thr Ser Glu Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro			
1820	1825	1830	1835

atc ccc aag gct cgt cgg ccc gag ggc agg acc tgg gct cag ccc ggg 18231
 Ile Pro Lys Ala Arg Arg Pro Glu Gly Arg Thr Trp Ala Gln Pro Gly
 1840 1845 1850

tac cct tgg ccc ctc tat ggc aat gag ggc tgc ggg tgg gcg gga tgg 18279
 Tyr Pro Trp Pro Leu Tyr Gly Asn Glu Gly Cys Gly Trp Ala Gly Trp
 1855 1860 1865

ctc ctg tct ccc cgt ggc tct cgg cct agc tgg ggc ccc aca gac ccc 18327
 Leu Leu Ser Pro Arg Gly Ser Arg Pro Ser Trp Gly Pro Thr Asp Pro
 1870 1875 1880

cgg cgt agg tgc cgc aat ttg ggt aag gtc atc gat acc ctt acg tgc 18375
 Arg Arg Arg Ser Arg Asn Leu Gly Lys Val Ile Asp Thr Leu Thr Cys
 1885 1890 1895

ggc ttc gcc gac ctc atg ggg tac ata ccg ctc gtc ggc gcc cct ctt 18423
 Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Ala Pro Leu
 1900 1905 1910 1915

gga ggc gct gcc agg gcc taatagtcga ctttgttccc actgtacttt 18471
 Gly Gly Ala Ala Arg Ala
 1920

tagctcgtac aaaatacaat atactttttca tttctccgta aacaacatgt tttcccatgt 18531

aatatccttt tctatttttc gttccgttac caactttaca catactttat atagctattc 18591

acttctatac actaaaaaac taagacaatt ttaattttgc tgccctgccat atttcaattt 18651

gttataaatt cctataattt atcctattag tagctaaaaa aagatgaatg tgaatcgaat 18711

cctaagagaa ttggatctga tccacaggac ggggtgtggtc gccatgatcg cgtagtcgat 18771

agtggctcca agtagcgaag cgagcaggac tgggcggcgg ccaaagcggc cggacagtgc 18831

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aaccaagcct atgcctacag catccagggt gacggtgccg aggatgacga tgagcgcatt 19011

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attcccgggt aataactgat ataattaaat tgaagctcta atttgtgagt ttagtatata 19191

tgcatctact tataatacag ttttttagtt ttgctggccg catcttctca aatatgcttc 19251

ccagcctgct tttctgtaac gttcaccctc taccttagca tcccttcctt ttgcaaatag 19311

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 cggcttaact gtgccctcca tggaaaaatc agtcaagata tccacatgtg tttttagtaa 19851
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 aggactagga tgagtagcag cacgttcctt atatgtagct ttcgacatga tttatcttcg 20031
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 <211> 1921
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<220>
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 Ser Val Ala Ala Thr Leu Gly Phe Gly Ala Tyr Met Ser Lys Ala His
 20 25 30
 Gly Ile Asp Pro Asn Ile Arg Thr Gly Val Arg Thr Ile Thr Thr Gly
 35 40 45
 Ser Pro Ile Thr Tyr Ser Thr Tyr Gly Lys Phe Leu Ala Asp Gly Gly
 50 55 60
 Cys Ser Gly Gly Ala Tyr Asp Ile Ile Ile Cys Asp Glu Cys His Ser
 65 70 75 80
 Thr Asp Ala Thr Ser Ile Leu Gly Ile Gly Thr Val Leu Asp Gln Ala
 85 90 95
 Glu Thr Ala Gly Ala Arg Leu Val Val Leu Ala Thr Ala Thr Pro Pro
 100 105 110

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Gly	Ser	Val	Thr	Val	Pro	His	Pro	Asn	Ile	Glu	Glu	Val	Ala	Leu	Ser	
		115						120					125			
Thr	Thr	Gly	Glu	Ile	Pro	Phe	Tyr	Gly	Lys	Ala	Ile	Pro	Leu	Glu	Val	
		130					135					140				
Ile	Lys	Gly	Gly	Arg	His	Leu	Ile	Phe	Cys	His	Ser	Lys	Lys	Lys	Cys	
	145					150				155					160	
Asp	Glu	Leu	Ala	Ala	Lys	Leu	Val	Ala	Leu	Gly	Ile	Asn	Ala	Val	Ala	
					165					170				175		
Tyr	Tyr	Arg	Gly	Leu	Asp	Val	Ser	Val	Ile	Pro	Thr	Ser	Gly	Asp	Val	
			180					185					190			
Val	Val	Val	Ala	Thr	Asp	Ala	Leu	Met	Thr	Gly	Tyr	Thr	Gly	Asp	Phe	
		195					200						205			
Asp	Ser	Val	Ile	Asp	Cys	Asn	Thr	Cys	Val	Thr	Gln	Thr	Val	Asp	Phe	
	210					215					220					
Ser	Leu	Asp	Pro	Thr	Phe	Thr	Ile	Glu	Thr	Ile	Thr	Leu	Pro	Gln	Asp	
	225				230					235					240	
Ala	Val	Ser	Arg	Thr	Gln	Arg	Arg	Gly	Arg	Thr	Gly	Arg	Gly	Lys	Pro	
				245				250						255		
Gly	Ile	Tyr	Arg	Phe	Val	Ala	Pro	Gly	Glu	Arg	Pro	Ser	Gly	Met	Phe	
			260					265					270			
Asp	Ser	Ser	Val	Leu	Cys	Glu	Cys	Tyr	Asp	Ala	Gly	Cys	Ala	Trp	Tyr	
		275					280					285				
Glu	Leu	Thr	Pro	Ala	Glu	Thr	Thr	Val	Arg	Leu	Arg	Ala	Tyr	Met	Asn	
	290					295					300					
Thr	Pro	Gly	Leu	Pro	Val	Cys	Gln	Asp	His	Leu	Glu	Phe	Trp	Glu	Gly	
	305				310					315					320	
Val	Phe	Thr	Gly	Leu	Thr	His	Ile	Asp	Ala	His	Phe	Leu	Ser	Gln	Thr	
				325					330					335		
Lys	Gln	Ser	Gly	Glu	Asn	Leu	Pro	Tyr	Leu	Val	Ala	Tyr	Gln	Ala	Thr	
			340					345					350			
Val	Cys	Ala	Arg	Ala	Gln	Ala	Pro	Pro	Pro	Ser	Trp	Asp	Gln	Met	Trp	
		355					360					365				
Lys	Cys	Leu	Ile	Arg	Leu	Lys	Pro	Thr	Leu	His	Gly	Pro	Thr	Pro	Leu	
	370					375					380					
Leu	Tyr	Arg	Leu	Gly	Ala	Val	Gln	Asn	Glu	Ile	Thr	Leu	Thr	His	Pro	
	385				390					395					400	
Val	Thr	Lys	Tyr	Ile	Met	Thr	Cys	Met	Ser	Ala	Asp	Leu	Glu	Val	Val	
				405					410					415		

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Thr	Ser	Thr	Trp	Val	Leu	Val	Gly	Gly	Val	Leu	Ala	Ala	Leu	Ala	Ala			
			420					425					430					
Tyr	Cys	Leu	Ser	Thr	Gly	Cys	Val	Val	Ile	Val	Gly	Arg	Val	Val	Leu			
		435					440					445						
Ser	Gly	Lys	Pro	Ala	Ile	Ile	Pro	Asp	Arg	Glu	Val	Leu	Tyr	Arg	Glu			
		450				455					460							
Phe	Asp	Glu	Met	Glu	Glu	Cys	Ser	Gln	His	Leu	Pro	Tyr	Ile	Glu	Gln			
		465			470					475					480			
Gly	Met	Met	Leu	Ala	Glu	Gln	Phe	Lys	Gln	Lys	Ala	Leu	Gly	Leu	Leu			
			485						490					495				
Gln	Thr	Ala	Ser	Arg	Gln	Ala	Glu	Val	Ile	Ala	Pro	Ala	Val	Gln	Thr			
			500					505					510					
Asn	Trp	Gln	Lys	Leu	Glu	Thr	Phe	Trp	Ala	Lys	His	Met	Trp	Asn	Phe			
		515					520					525						
Ile	Ser	Gly	Ile	Gln	Tyr	Leu	Ala	Gly	Leu	Ser	Thr	Leu	Pro	Gly	Asn			
		530				535					540							
Pro	Ala	Ile	Ala	Ser	Leu	Met	Ala	Phe	Thr	Ala	Ala	Val	Thr	Ser	Pro			
		545			550					555					560			
Leu	Thr	Thr	Ser	Gln	Thr	Leu	Leu	Phe	Asn	Ile	Leu	Gly	Gly	Trp	Val			
			565					570						575				
Ala	Ala	Gln	Leu	Ala	Ala	Pro	Gly	Ala	Ala	Thr	Ala	Phe	Val	Gly	Ala			
		580					585					590						
Gly	Leu	Ala	Gly	Ala	Ala	Ile	Gly	Ser	Val	Gly	Leu	Gly	Lys	Val	Leu			
		595					600				605							
Ile	Asp	Ile	Leu	Ala	Gly	Tyr	Gly	Ala	Gly	Val	Ala	Gly	Ala	Leu	Val			
		610			615					620								
Ala	Phe	Lys	Ile	Met	Ser	Gly	Glu	Val	Pro	Ser	Thr	Glu	Asp	Leu	Val			
		625			630					635				640				
Asn	Leu	Leu	Pro	Ala	Ile	Leu	Ser	Pro	Gly	Ala	Leu	Val	Val	Gly	Val			
			645					650						655				
Val	Cys	Ala	Ala	Ile	Leu	Arg	Arg	His	Val	Gly	Pro	Gly	Glu	Gly	Ala			
		660						665					670					
Val	Gln	Trp	Met	Asn	Arg	Leu	Ile	Ala	Phe	Ala	Ser	Arg	Gly	Asn	His			
		675				680						685						
Val	Ser	Pro	Thr	His	Tyr	Val	Pro	Glu	Ser	Asp	Ala	Ala	Ala	Arg	Val			
		690				695				700								
Thr	Ala	Ile	Leu	Ser	Ser	Leu	Thr	Val	Thr	Gln	Leu	Leu	Arg	Arg	Leu			
			705			710				715					720			

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His	Gln	Trp	Ile	Ser	Ser	Glu	Cys	Thr	Thr	Pro	Cys	Ser	Gly	Ser	Trp	725	730	735
Leu	Arg	Asp	Ile	Trp	Asp	Trp	Ile	Cys	Glu	Val	Leu	Ser	Asp	Phe	Lys	740	745	750
Thr	Trp	Leu	Lys	Ala	Lys	Leu	Met	Pro	Gln	Leu	Pro	Gly	Ile	Pro	Phe	755	760	765
Val	Ser	Cys	Gln	Arg	Gly	Tyr	Lys	Gly	Val	Trp	Arg	Gly	Asp	Gly	Ile	770	775	780
Met	His	Thr	Arg	Cys	His	Cys	Gly	Ala	Glu	Ile	Thr	Gly	His	Val	Lys	785	790	795
Asn	Gly	Thr	Met	Arg	Ile	Val	Gly	Pro	Arg	Thr	Cys	Arg	Asn	Met	Trp	805	810	815
Ser	Gly	Thr	Phe	Pro	Ile	Asn	Ala	Tyr	Thr	Thr	Gly	Pro	Cys	Thr	Pro	820	825	830
Leu	Pro	Ala	Pro	Asn	Tyr	Thr	Phe	Ala	Leu	Trp	Arg	Val	Ser	Ala	Glu	835	840	845
Glu	Tyr	Val	Glu	Ile	Arg	Gln	Val	Gly	Asp	Phe	His	Tyr	Val	Thr	Gly	850	855	860
Met	Thr	Thr	Asp	Asn	Leu	Lys	Cys	Pro	Cys	Gln	Val	Pro	Ser	Pro	Glu	865	870	875
Phe	Phe	Thr	Glu	Leu	Asp	Gly	Val	Arg	Leu	His	Arg	Phe	Ala	Pro	Pro	885	890	895
Cys	Lys	Pro	Leu	Leu	Arg	Glu	Glu	Val	Ser	Phe	Arg	Val	Gly	Leu	His	900	905	910
Glu	Tyr	Pro	Val	Gly	Ser	Gln	Leu	Pro	Cys	Glu	Pro	Glu	Pro	Asp	Val	915	920	925
Ala	Val	Leu	Thr	Ser	Met	Leu	Thr	Asp	Pro	Ser	His	Ile	Thr	Ala	Glu	930	935	940
Ala	Ala	Gly	Arg	Arg	Leu	Ala	Arg	Gly	Ser	Pro	Pro	Ser	Val	Ala	Ser	945	950	955
Ser	Ser	Ala	Ser	Gln	Leu	Ser	Ala	Pro	Ser	Leu	Lys	Ala	Thr	Cys	Thr	965	970	975
Ala	Asn	His	Asp	Ser	Pro	Asp	Ala	Glu	Leu	Ile	Glu	Ala	Asn	Leu	Leu	980	985	990
Trp	Arg	Gln	Glu	Met	Gly	Gly	Asn	Ile	Thr	Arg	Val	Glu	Ser	Glu	Asn	995	1000	1005
Lys	Val	Val	Ile	Leu	Asp	Ser	Phe	Asp	Pro	Leu	Val	Ala	Glu	Glu	Asp	1010	1015	1020

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Glu Arg Glu Ile Ser Val Pro Ala Glu Ile Leu Arg Lys Ser Arg Arg			
025	1030	1035	1040
Phe Ala Gln Ala Leu Pro Val Trp Ala Arg Pro Asp Tyr Asn Pro Pro			
	1045	1050	1055
Leu Val Glu Thr Trp Lys Lys Pro Asp Tyr Glu Pro Pro Val Val His			
	1060	1065	1070
Gly Cys Pro Leu Pro Pro Pro Lys Ser Pro Pro Val Pro Pro Pro Arg			
	1075	1080	1085
Lys Lys Arg Thr Val Val Leu Thr Glu Ser Thr Leu Ser Thr Ala Leu			
	1090	1095	1100
Ala Glu Leu Ala Thr Arg Ser Phe Gly Ser Ser Ser Thr Ser Gly Ile			
	1105	1110	1115
Thr Gly Asp Asn Thr Thr Thr Ser Ser Glu Pro Ala Pro Ser Gly Cys			
	1125	1130	1135
Pro Pro Asp Ser Asp Ala Glu Ser Tyr Ser Ser Met Pro Pro Leu Glu			
	1140	1145	1150
Gly Glu Pro Gly Asp Pro Asp Leu Ser Asp Gly Ser Trp Ser Thr Val			
	1155	1160	1165
Ser Ser Glu Ala Asn Ala Glu Asp Val Val Cys Cys Ser Met Ser Tyr			
	1170	1175	1180
Ser Trp Thr Gly Ala Leu Val Thr Pro Cys Ala Ala Glu Glu Gln Lys			
	1185	1190	1195
Leu Pro Ile Asn Ala Leu Ser Asn Ser Leu Leu Arg His His Asn Leu			
	1205	1210	1215
Val Tyr Ser Thr Thr Ser Arg Ser Ala Cys Gln Arg Gln Lys Lys Val			
	1220	1225	1230
Thr Phe Asp Arg Leu Gln Val Leu Asp Ser His Tyr Gln Asp Val Leu			
	1235	1240	1245
Lys Glu Val Lys Ala Ala Ala Ser Lys Val Lys Ala Asn Leu Leu Ser			
	1250	1255	1260
Val Glu Glu Ala Cys Ser Leu Thr Pro Pro His Ser Ala Lys Ser Lys			
	1265	1270	1275
Phe Gly Tyr Gly Ala Lys Asp Val Arg Cys His Ala Arg Lys Ala Val			
	1285	1290	1295
Thr His Ile Asn Ser Val Trp Lys Asp Leu Leu Glu Asp Asn Val Thr			
	1300	1305	1310
Pro Ile Asp Thr Thr Ile Met Ala Lys Asn Glu Val Phe Cys Val Gln			
	1315	1320	1325

Pro Glu Lys Gly Gly Arg Lys Pro Ala Arg Leu Ile Val Phe Pro Asp
 1330 1335 1340

Leu Gly Val Arg Val Cys Glu Lys Met Ala Leu Tyr Asp Val Val Thr
 345 1350 1355 1360

Lys Leu Pro Leu Ala Val Met Gly Ser Ser Tyr Gly Phe Gln Tyr Ser
 1365 1370 1375

Pro Gly Gln Arg Val Glu Phe Leu Val Gln Ala Trp Lys Ser Lys Lys
 1380 1385 1390

Thr Pro Met Gly Phe Ser Tyr Asp Thr Arg Cys Phe Asp Ser Thr Val
 1395 1400 1405

Thr Glu Ser Asp Ile Arg Thr Glu Glu Ala Ile Tyr Gln Cys Cys Asp
 1410 1415 1420

Leu Asp Pro Gln Ala Arg Val Ala Ile Lys Ser Leu Thr Glu Arg Leu
 425 1430 1435 1440

Tyr Val Gly Gly Pro Leu Thr Asn Ser Arg Gly Glu Asn Cys Gly Tyr
 1445 1450 1455

Arg Arg Cys Arg Ala Ser Gly Val Leu Thr Thr Ser Cys Gly Asn Thr
 1460 1465 1470

Leu Thr Cys Tyr Ile Lys Ala Arg Ala Ala Cys Arg Ala Ala Gly Leu
 1475 1480 1485

Gln Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val Val Ile Cys
 1490 1495 1500

Glu Ser Ala Gly Val Gln Glu Asp Ala Ala Ser Leu Arg Ala Phe Thr
 505 1510 1515 1520

Glu Ala Met Thr Arg Tyr Ser Ala Pro Pro Gly Asp Pro Pro Gln Pro
 1525 1530 1535

Glu Tyr Asp Leu Glu Leu Ile Thr Ser Cys Ser Ser Asn Val Ser Val
 1540 1545 1550

Ala His Asp Gly Ala Gly Lys Arg Val Tyr Tyr Leu Thr Arg Asp Pro
 1555 1560 1565

Thr Thr Pro Leu Ala Arg Ala Ala Trp Glu Thr Ala Arg His Thr Pro
 1570 1575 1580

Val Asn Ser Trp Leu Gly Asn Ile Ile Met Phe Ala Pro Thr Leu Trp
 585 1590 1595 1600

Ala Arg Met Ile Leu Met Thr His Phe Phe Ser Val Leu Ile Ala Arg
 1605 1610 1615

Asp Gln Leu Glu Gln Ala Leu Asp Cys Glu Ile Tyr Gly Ala Cys Tyr
 1620 1625 1630

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Ser Ile Glu Pro Leu Asp Leu Pro Pro Ile Ile Gln Arg Leu His Gly
1635 1640 1645

Leu Ser Ala Phe Ser Leu His Ser Tyr Ser Pro Gly Glu Ile Asn Arg
1650 1655 1660

Val Ala Ala Cys Leu Arg Lys Leu Gly Val Pro Pro Leu Arg Ala Trp
665 1670 1675 1680

Arg His Arg Ala Arg Ser Val Arg Ala Arg Leu Leu Ala Arg Gly Gly
1685 1690 1695

Arg Ala Ala Ile Cys Gly Lys Tyr Leu Phe Asn Trp Ala Val Arg Thr
1700 1705 1710

Lys Leu Lys Leu Thr Pro Ile Ala Ala Ala Gly Gln Leu Asp Leu Ser
1715 1720 1725

Gly Trp Phe Thr Ala Gly Tyr Ser Gly Gly Asp Ile Tyr His Ser Val
1730 1735 1740

Ser His Ala Arg Pro Arg Trp Ile Trp Phe Cys Leu Leu Leu Leu Ala
745 1750 1755 1760

Ala Gly Val Gly Ile Tyr Leu Leu Pro Asn Arg Met Ser Thr Asn Pro
1765 1770 1775

Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn Arg Arg Pro Gln Asp
1780 1785 1790

Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly Gly Val Tyr Leu Leu
1795 1800 1805

Pro Arg Arg Gly Pro Arg Leu Gly Val Arg Ala Thr Arg Lys Thr Ser
1810 1815 1820

Glu Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro Ile Pro Lys Ala Arg
825 1830 1835 1840

Arg Pro Glu Gly Arg Thr Trp Ala Gln Pro Gly Tyr Pro Trp Pro Leu
1845 1850 1855

Tyr Gly Asn Glu Gly Cys Gly Trp Ala Gly Trp Leu Leu Ser Pro Arg
1860 1865 1870

Gly Ser Arg Pro Ser Trp Gly Pro Thr Asp Pro Arg Arg Arg Ser Arg
1875 1880 1885

Asn Leu Gly Lys Val Ile Asp Thr Leu Thr Cys Gly Phe Ala Asp Leu
1890 1895 1900

Met Gly Tyr Ile Pro Leu Val Gly Ala Pro Leu Gly Gly Ala Ala Arg
905 1910 1915 1920

Ala